AGENDA ITEM J-1

CITY OF LODI
COUNCIL COMMUNICATION

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AGENDA TITLE: Approve Plans and Specifications and Authorize Advertisement for Bids for Lodi Surface Water Treatment Facility Project

MEETING DATE: July 21, 2010

PREPARED BY: Public Works Director

RECOMMENDED ACTION: Approve plans and specifications and authorize advertisement for bids for Lodi Surface Water Treatment Facility Project.

BACKGROUND INFORMATION: On December 16, 2009 City Council authorized HDR, Inc., of Folsom, to complete the final design work for the Surface Water Treatment Facility and Transmission Project and approved the selection of the Pall Membrane Filtration System. The design work is now complete, and we are ready to proceed with the next phase of the project.

The project has been presented to and approved by the Parks and Recreation Commission and the Site Plan and Architectural Review Committee.

Council is being asked to approve the plans and specifications and authorize advertisement for bids for the Surface Water Treatment Facility Project, which includes:

- The construction of a raw water pump station in Woodbridge;
- Approximately 500 feet of 30-inch raw water transmission pipe, an operations building, chemical building, sedimentation structure, 3-million-gallon treated water storage tank, and treated water high service pump station at the treatment facility's 4.2-acre site adjacent to Lodi Lake;
- Approximately 4,000 feet of 36-inch treated water transmission pipe and installation of chlorine and chemical injection systems at approximately 25 well sites throughout the City;
- Traffic signals and intersection work at Mills Avenue and Turner Road; and
- All other site and utility improvements associated with the project.

A prequalification process is being used to determine eligible prime contractor, electrical and instrumentation bidders to ensure contractors have the necessary experience to perform the work. The prime contractor qualification process has already begun. Of 18 submissions received, about 10 contractors will meet the requirements. Review of the qualifications and reference checks are ongoing.

FISCAL IMPACT: Operation costs associated with the project are estimated to be $1,200,000 during the 12-month start-up period and then $1,000,000 per year after that.

FUNDING AVAILABLE: This project will be funded by the Water Fund with bonded debt planned to be sold in October 2010. A request for appropriation of funds will be made at contract award.

F. Wally Sandelin
Public Works Director

Prepared by Gary Wiman, Construction Project Manager
FWS/GW/pmf

APPROVED: ______________________
Konradt Bartlam, Interim City Manager

WHITE PAPER

Surface Water Treatment Facilities

City of Lodi
Public Works Department

June 30, 2010

Table of Contents

List of Figures

List of Tables

Introduction

Staff has compiled this summary report of historical information, studies and reports to assist in preparation for many important decisions the Council will be asked to make in the coming months. Copies of many of the referenced documents are contained in the large Water Binder provided to Council in the past.

The Lodi Surface Water Treatment Plant project is an integral element of a conjunctive water supply program that assures a long term high quality water supply for its customers. The term "conjunctive" refers to the combined usage of surface water and groundwater supplies to serve the needs of the community. As we are all aware, the California water cycle includes years of ample rainfall and also multiple year droughts.

Lodi exists in a region that has critically overdrawn it groundwater resource. As reported by the Legislative Analyst's Office, "California's water system is facing a series of challenges affecting water availability, reliability, and delivery. Groundwater management is one of the state's most critical liquid assets – a key component of both local and statewide efforts to better manage water supply and water quality in the state." Further, "In our view, reevaluating how groundwater is managed is necessary if it is to achieve its full potential as a reliable source of water." It truly is not an issue of whether the groundwater basin will be adjudicated but only a matter of when.

Lodi's agreement with Woodbridge Irrigation District (WID) anticipated the surface water would be put to the highest beneficial use. A number of experts in the water field have reported to the City Council that "treat and drink' is the highest beneficial use of the Mokelumne River.

The most effective form of preserving the groundwater resource is leaving it in the ground. Utilizing the 6,000 acre-feet annually from WID will effectively bank groundwater for use during times of drought when our deliveries will be limited to 3,000 acre-feet. This is a primary benefit of a conjunctive water supply program.

Past City Council Water Actions

The following presents a summary of past City Council decisions relating to the City's water utility and the acquisition, alternatives evaluation and the proposed project for putting the WID water to its highest and best use.

October 3, 2001 – Approved water rate increase to reconstruct small diameter water mains throughout the community but primarily east of Church Street. To date $5,986,187 has been expended through four wastewater projects and three water projects.

April 16, 2003 – Approved Woodbridge Irrigation District Water Sale Agreement. A summary of the Agreement can be found on page 9.

November 2, 2005 – Accepted West Yost and Associates Study for full implementation of the WID water supply that identified a capital cost for a future water treatment plant at $51 million (2005 dollars)

February 7, 2006 – Received presentation on 2005 Urban Water Management Plan, Update on Surface Water Treatment Plant and Proposed Recycled Water Master Plan. Capital cost for future water treatment plant stated to be in the range of $20 – 25 million.

March 1, 2006 – Received background information on implementing WID surface water program. Capital cost for future water treatment plant stated to be up to $29.5 million.

November 14, 2006 – Received presentation on water treatment plant financing (i.e., Community Facilites District).

December 20, 2006 – Approved Contract with HDR for Surface Water Treatment Facility Conceptual Design and Feasibility Evaluation for water supply and transmission system. (Appropriated $400,000)

October 17, 2007 – Approved preferred site selection for surface water treatment facilities at Lodi Lake. Conditioned decision upon Parks and Recreation receiving value for land taken out of future park usage based upon an appraisal.

January 16, 2008 – Approved Amendment to Woodbridge Irrigation District Water Purchase Agreement. A summary of the Amendment can be found on page 10.

January 16, 2008 – Approved agreements for the construction of raw water connection at WID fish screen. (Appropriated $92,000)

July 16, 2008 – Received Surface Water Treatment Facility Conceptual Design and Feasibility Evaluation Final Report. Capital cost for future water treatment plant stated to be $41 million and annual operating costs were estimated to be $1.5 million per year.

March 18, 2009 - Approved contract with HDR, Inc. for preliminary design (30%) of surface water treatment plant, storage tank, transmission main, and well modifications. (Appropriated $987,000)

April 15, 2009 – Approved construction of the surface water treatment plant raw water transmission pipeline via cooperative agreement with San Joaquin County. (Appropriated $1 million)

December 16, 2009 – Approved contract with HDR, Inc. for final design of surface water treatment plant and associated facilities. Approved selection of Pall Membrane Systems as the water treatment plant filtration equipment. (Appropriated $2 million)

January 6, 2010 – Approved engagement of Lamont Financial Services and Stone and Youngberg LLC for professional services related to financing the surface water treatment plant.

May 19, 2010 – Approved the engagement of Jones Hall for legal professional services related to financing the surface water treatment plant.

May 5, 2010 - Approved Standardized Questionnaire for Bidder Qualification for use in pre-qualifying contractors for the construction of the surface water treatment plant and associated facilities.

Future City Council Actions

July 21 – Approve Plans and Specifications and Advertisement for Bids for Surface Water Treatment Plant Facilities

Public Hearing to Consider Initial Study/Mitigated Negative Declaration for Water Plant

Authorize the entry of a Joint Powers Agreement creating the Lodi Public Financing Authority

Authorize Staff to Proceed with Bond Financing for Water Plant Project

Adopt Amended Reimbursement Resolution

Authorize City Manager to Sign Incidental Take Mitigation Measures

September 1 – Approve Preliminary Official Statement and Legal Documents

September 1 – Approve Pre-payment of State Revolving Fund Loan (approximately $1.4 million)

October 20 – Award Construction Contract

Date Uncertain - Amend WID Contract to extend banking provisions beyond 42,000 acre-feet and to include long-term lease of the raw water pump station site at the WID Construction Yard.

Projected Water Demands and Sources of Supply

Projected Water Demands – The City's 2005 Urban Water Management Plan (UWMP) projected the City's total future demand based on an average increase rate of 1.5 percent over the recorded 2004 demand of 17,011 acre feet per year (AFY) (15.2 mgd). Average annual potable water demands are expected to increase to 25,100 AFY (22.4 mgd) by 2030. With 15 percent residential use conservation, the future demand is anticipated to be reduced to 21,300 AFY (19 mgd). The City's 2010 General Plan estimated future water demand (Phase 1, 2, and 3) to be 29,377 acre feet per year.

Current and Projected Water Supply – The City has historically used from 11,462 AFY of groundwater in 1970 to 17,011 AFY used in 2004. Historical data indicate that the City's groundwater elevation decreased on average 0.39 feet per year from 1927 to 2004, although groundwater elevation also fluctuates due to annual rainfall. Historical groundwater elevation and annual rainfall are presented in Figure 1. This figure indicates that the groundwater basin underlying Eastern San Joaquin County that supplies the City's wells is in an overdraft condition. The 2005 UWMP estimates that the safe yield of the underlying groundwater basin is approximately 15,000 AFY on an acreage-based retationship. The declining groundwater basin is a result of groundwater extraction by all groundwater users in the area, including other cities, agriculture, private well owners, and the City.

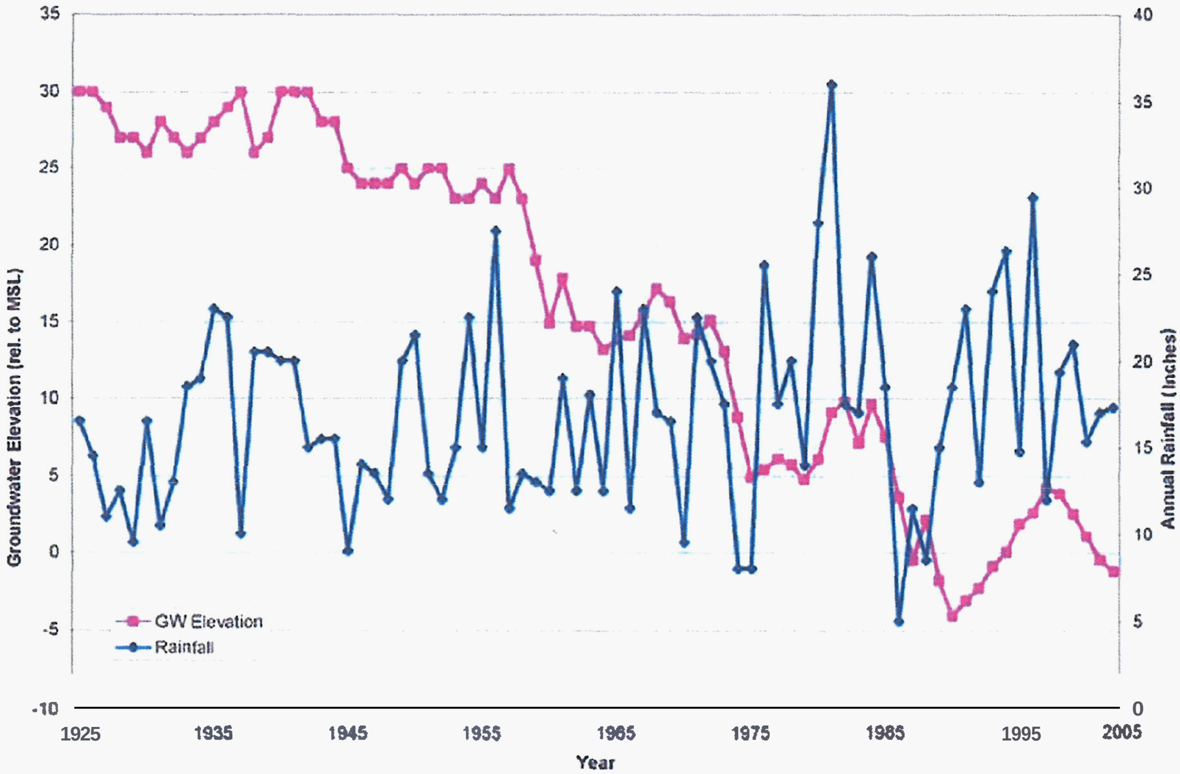

Figure 1. Historical groundwater elevation and annual rainfall

The City plans to reduce its groundwater pumping in the long term as part of a regional effort to stabilize the groundwater basin. To achieve this goal, the City of Lodi entered into a purchase contract with Woodbridge Irrigation District (WID) in October 2003 and began purchasing 6,000 acre-feet per year (AFY) of WID's pre-1914 Mokelumne River water entitlement. The purchase is intended to supplement the City's water supply to meet long term water demands and to reduce the City's dependence on the groundwater aquifer. The City evaluated alternatives for utilizing the purchased water, including recharge in spreading basins and construction of a surface water conveyance and treatment system to allow for direct use by current and future users.

The UWMP projected the future water supply will include groundwater, surface water, and recycled wastewater. The projected groundwater supply will be 15,000 AFY from now until year 2030, based on an estimated safe yield of the groundwater basin serving the City. The projected surface supply is 6,000 AFY from now until year 2043 based on a contract with WID.

Potentially, an additional 7,000 AFY could be secured after that based on the formula of 3 AF of water for each acre of City land within the WID service area converted from agricultural to municipal/industrial uses. The projected recycled water supply is 10,380 AFY in 2030 based on the UWMP.

Improvements to the WID water delivery system funded in part by the City's water purchase include construction of an inflatable dam to raise the water level in the river. The City has not yet used any WID water and has negotiated with WID to extend the banking period for unused water. The diversion of WID water from the Mokelumne River is permitted from March 1 through October 15. The City has reached agreement with EBMUD to allow operation of the SWTF year-round with 1,000 AFY available from October 16 through the end of February. WID has indicated they will be able to leave the inflatable dam in place year round to allow water supply to the City through the recently completed fish screen and canal intake structure. The intake structure is fitted with a 48-inch outfall pipe to supply water to the City.

The City also investigated the possibility of using the purchased water to recharge the aquifer with spreading basins. However, the costs of this option, the lack of control of the fate of the water, and efficiency of the water reaching the aquifer has led the City to pursue utilizing the water by treating and pumping the water into the existing water distribution system.

Woodbridge Irrigation District Water Sale Agreement

On April 16, 2003, the City Council approved the Woodbridge Irrigation District Water Sale Agreement providing up to 6,000 acre-feet annually to the City to address an existing groundwater overdraft condition. By 2030, the estimated overdraft will grow to 10,000 acre-feet annually if nothing were done.

The major points of the WID Water Sale Agreement are summarized below:

- 6,000 acre-feet of water annually to the City – This represents the amount of water the District feels it can provide under normal circumstances.

- Payment to the District of $1.2 million annually – This amounts to a cost of $200 per acre-foot, which is a reasonable and fair amount, particularly in light of the cost of other alternatives and the fact that the delivery point of the water is at our doorstep.

- City to build and pay for facilities necessary to accept and use the water.

- Provision for additional water under various circumstances – Should the City obtain other rights on the Mokelumne River, we could "wheel" water via the WID at a reduced cost ($20 per acre-foot), or if WID had additional water available, we could purchase it at a lower rate ($100 per acre-foot).

- Price escalator provisions after six years – Linked to the CPI with a 2% minimum and 5% maximum.

- A 40-year term, with mutually agreeable renewal provisions.

- Provisions for dry year curtailments – Recognizing that the WID's supply is reduced in dry years, and that the City can fall back on groundwater, we can reduce our use of surface water in a greater proportion than the District, from 6,000 to 3,000 acre-feet (see next point).

- Provisions for "carryover" or banking of water – Recognizing that we will not be able to use the water immediately, we can "bank" the first three years for use later, as the water is available. Similarly, during dry years when we curtail use per the preceding point, we can use additional water in later, wet years when the water is available.

- Use of the District canal and right-of-way for delivery and distribution – In addition to eventually building intake(s) within the WID canal right-of-way, we may wish to use the canal right-of-way to transport water to portions of the City or build groundwater injection facilities.

First Amendment to the Woodbridge Irrigation District Water Sale Agreement

On January 16, 2008, the City Council approved the First Amendment to the WID Water Sale Agreement. The amendment included a four year extension to 2047 and four years additional banking (total 42,000 acre-feet). The banking provision terminates October 15, 2010.

The major points of the amendment are summarized below:

- In Section 2, WID is providing a water supply connection with their fish screen project which will allow the City to construct pumping facilities within the District's right of way in Woodbridge. This wiii allow for a smaller diameter (and less expensive) transmission pipe from the connection at the WID fish screen to the planned treatment plant site. It will also reduce the area needed for the facility.

- Section 3 covers availability ***of*** additional water and potential sharing with Stockton.

- Section 4 covers the extended term but also includes new provisions that strengthen renewal of the agreement in 2047.

- Section 5 provides for assurance of additional WID water should the City annex lands within the District.

- Section 6 provides more flexibility to the City to utilize the water during a dry year.

- The 2003 agreement, in Section 4(c), gives the City a first right of refusal should WID consider sale of additional water to another entity. WID and the City of Stockton have been negotiating a sale similar to the Lodi sale. The proposed amendment, in Section 7 waives that right of first refusal. Staff feels this is appropriate as the City is not in a position to economically utilize the additional water, and the benefit of Stockton's using this surface water in lieu of groundwater will benefit the entire groundwater basin. Staff has reviewed the District's draft sale agreement with the City of Stockton. While there are some technical differences between it and Lodi's agreement, they mainly refer to delivery details to Stockton. The main portions of the agreement (price, dry-year curtailment, provisions for additional water with newly annexed land) are identical to the Lodi agreement as revised.

- Section 8 extends the “bank by four years, to a total of 42,000 acre-feet (from three years/ 18,000 acre-feet).
- Section 9 clarifies use of WID right-of-way.
- Section 10 provides that the District may install water quality improvements at the City’s pump stations, subject to the City’s approval.

Fourth Supplementary Agreement between Woodridge Irrigation District and East Bay Municipal Utiltiy District (EBMUD)

April 2009, the Fourth Supplementary Agreement between WID and EMBUD was approved. The most significant element of this agreement is the provision allowing WID to request EBMUD to release up to 1,000 acre-feet during the period from October 15 through the end of February. This will permit the surface water treatment plant to potentially operate year round and facilitate the City usage of the 42,000 acre-feet of banked water.

Project Description – Surface Water Treatment Plant Facilities

The purpose of the Project is to provide a secure, reliable supplemental supply of water for the City to meet their current and future water needs while reducing dependence on groundwater.

Project Location

The City owns 12.75 acres between the Union Pacific Railroad (UPRR) spur line and Lodi Lake near the intersection of Turner Road and Lower Sacramento Road. The SWTF would be constructed on approximately four acres at the south end of the property adjacent to the UPRR spur line (Figure 2). The entrance to the property would be an access road located at the north leg of the intersection of Turner Road and North Mills Avenue. The entrance would be shared with future park uses that would be constructed between the SWTF and Lodi Lake.

The City has decided to build the RWPS on the west side of Lower Sacramento Road across from the WID intake and fish screen and south of the WID canal on property currently owned by WID. During construction of the WID fish screen structure, a 48-inch pipe was constructed along with a 36-inch raw water pipe to the RWPS site and a 30-inch discharge pipe to the SWTF site. The portion of the raw water pipeline located on the City-owned property has yet to be constructed.

Proposed Facilities

A detailed description of all facilities of the project is provided in the following subsections.

Raw Water Pump Station

The RWPS would deliver 2.0 to 11.5 mgd of untreated water to the SWTF at the initial phase, and would be expandable to 23 mgd at the final phase. The initial phase is expected to be in operation in less than three years and the final phase would be built much later. The layout of the RWPS is provided in Figure 3.

Figure 2. Project Location

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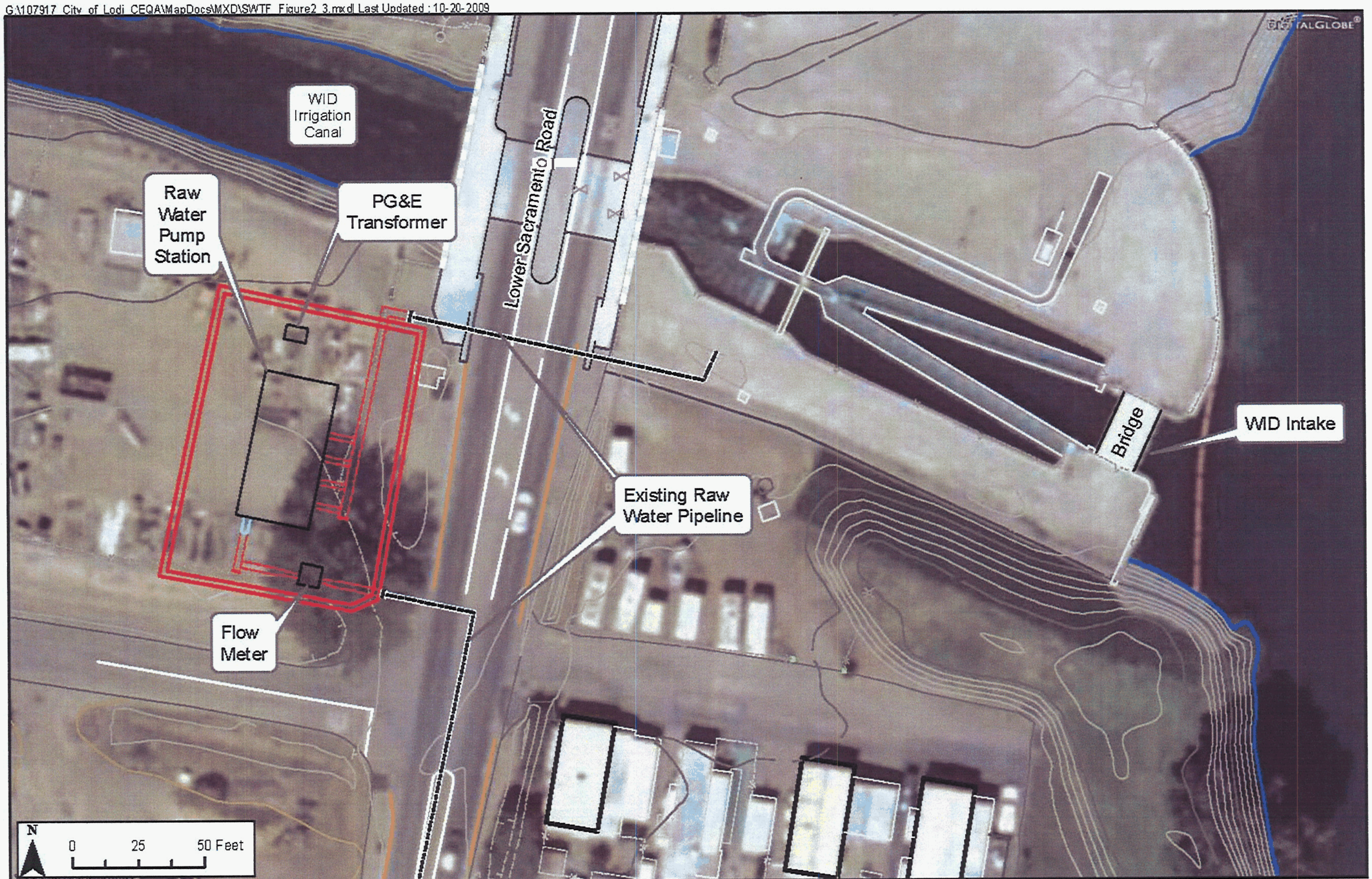

Layout of Raw Water Pump Station

FIGURE 2-3

HDR
ONE COMPANY | *Many Solutions*

Surface Water Treatment Facility | City of Lodi, CA | HDR Project No. 141.107917.006

Figure 3. Layout of Raw Water Pump Station

The RWPS building would include a pump room and an electrical room. Concrete masonry construction would be provided for aesthetics, durability, and security reasons. The RWPS building would be designed around vertical turbine pumps, which would be mounted on a concrete pad above the floor. Climate control would be provided for the electrical room to keep the electrical equipment and controls within their operable temperature range. The pump station would be ventilated.

The RWPS would receive electrical service from Pacific Gas and Electric (PG&E) since it is located outside the area served by the City's Electric Utility Department. A new 800-ampere, 480/277 volt, three-phase, four-wire electrical service utility service would serve the RWPS.

The RWPS design would incorporate design elements to attenuate the noise generated by the pumps and motors. These building design elements would include acoustical barrier panels on the pump room walls and use of acoustical louvers.

Security measures would be provided to protect the RWPS from vandalism or other threats to the City water supply. Secure locks and intrusion alarms would be provided for the doors and electrical panels. Lighting would be provided on all sides of the building. Video cameras would be provided outside the building and would have the ability to record and store up to 24-hours of data.

The RWPS site, occupying approximately 0.2 acres, would be fenced with access from Carolina Street. Decorative fencing, facing Lower Sacramento Road and Carolina Street, would be provided similar to the existing fish screen fencing. A sidewalk, curb, and gutter would be constructed along the Carolina Street frontage of the RWPS.

Raw Water Pipeline

The 36-inch gravity line from the WID fish screen to the RWPS and the 30-inch discharge pressure line from the RWPS to the SWTF, as identified on Figure *2,* were constructed as part of the planned widening and reconstruction of Lower Sacramento Road by the County.

Surface Water Treatment Facility

The City owns 12.75 acres land between the railroad tracks and Lodi Lake. The SWTF would be constructed on approximately four acres at the south end of the property adjacent to the railroad tracks. The entrance to the property would be located at the southeast corner of the parcel at the intersection of Turner Road and North Mills Avenue. The entrance would be shared with other park uses that would be constructed in the future. A photo of the existing site is provided in Figure 4.

Figure 4. Existing SWTF Site

The SWTF would have an Operations Building that would house the membranes, laboratory, and administration and operations offices. A Chemical Building would house a workshop, membrane feed pumps, autostrainers, chemical storage and feed systems, and a future dewatering system. Space would be provided on the site to allow for expanding the Operations and Chemical buildings to accommodate plant expansion to 20 mgd. A third building would contain the high service pumps and electrical room. Other components of the SWTF would include a reverse filtration waste tank, plate settler for reverse filtration water, sedimentation basin, high service pump station, soda ash silo, and a three-million-gallon storage tank.

The SWTF would receive electrical service from the City's Electric Utility Department. The SWTF would require a 3,200 ampere, 480/277 volt, three-phase, four-wire electrical service, which would be sufficient to handle the additional loads installed in the future for 20-mgd service.

A small standby generator (diesel or natural gas) would be provided to operate critical systems (computers, lights HVAC system, etc.) in the Operations Building. A larger standby diesel engine generator is planned for the future to provide electrical power to the SWTF in case of a power outage. The future backup power system would operate the membrane equipment; chemical feed system; high service pumps; facility lighting; heating, ventilation, and air-conditioning (HVAC) equipment, and supervisory control and data acquisition (SCADA) equipment during power outages. The larger standby generator system could be expanded as the facility grows.

The SWTF would have a SCADA system that would provide control and automatic operation of the water treatment processes as well as storage of plant operating and regulatory compliance data. The SCADA system would include the RWPS, storage facilities, and groundwater wells, and would be set up as a fully functional network node that can be monitored remotely from the City's central SCADA location at the Municipal Service Center.

The following sections discuss the general layout of the SWTF. A layout of the SWTF is presented in Figure 5. Refer to Figure 11 to view the location of the various components in the treatment process.

Structural Facilities

The Operations Building containing the membranes and operations and administration offices would be located on the west side of the SWTF site and near the SWTF entrance to minimize visitor traffic on the site. The storage tank, soda ash silo, and the high service pump station would be placed on the southeastern portion of the site to minimize their visual impact when viewed from the future park. Views of these structures from Turner Road would be screened by existing trees. The finished floor elevation of both structures would be 48 feet above mean sea level, approximately six inches above finished grade and one foot above the 100-year floodplain. The storage tank would be partially buried to minimize its visual impact. The sedimentation basin would be located along the northwestern property line. Sanitary service from each building would be routed to the existing sewer main in Turner Road as indicated in Figure 5. The sewer line would be bored under the railroad tracks to Turner Road where it would connect to an existing manhole.

Operations Building

The Operations Building would house administrative offices, the operations and control room, the process control laboratory, locker rooms, membrane filtration equipment, and associated electrical gear. The large room that would house the filtration equipment would have ample exterior access for the maintenance of this equipment. Roll-up doors would be placed for installing and removing large pieces of equipment, such as the membranes, strainers, chemical storage tanks, and pumps. Overhead doors would be placed in other areas, such as the membrane room, and compressor and electrical rooms to accommodate equipment or truck access.

Chemical Building

The concrete masonry unit (CMU)-block Chemical Building would include the following rooms and equipment: membrane feed pump and autostrainers; electrical room; mechanical room; rooms for polymer, corrosion inhibitor, coagulant, soda ash storage and feed; sodium hypochlorite storage and feed room; aluminum chlorohydrate storage and feed; and a workshop. Space would be provided on the site to expand the building for future facilities that could include rooms for mechanical dewatering, ultraviolet (UV) light disinfection, powdered activated carbon, or fluoride.

High Service Pump Station

The high service pump station would be housed in a CMU-block building that also would have an electrical room, containing the main switch gear for the SWTF. The initial phase of the SWTF high service pump station would have a firm capacity of 10 mgd while the final phase capacity would be 25 mgd. The pump station’s capacity would be greater than the SWTF capacity to account for peak periods when demand exceeds treatment capacity. The initial phase would have three 200-hp pumps (two duty; one standby); the final phase would have six 200-hp pumps (five duty; one standby).

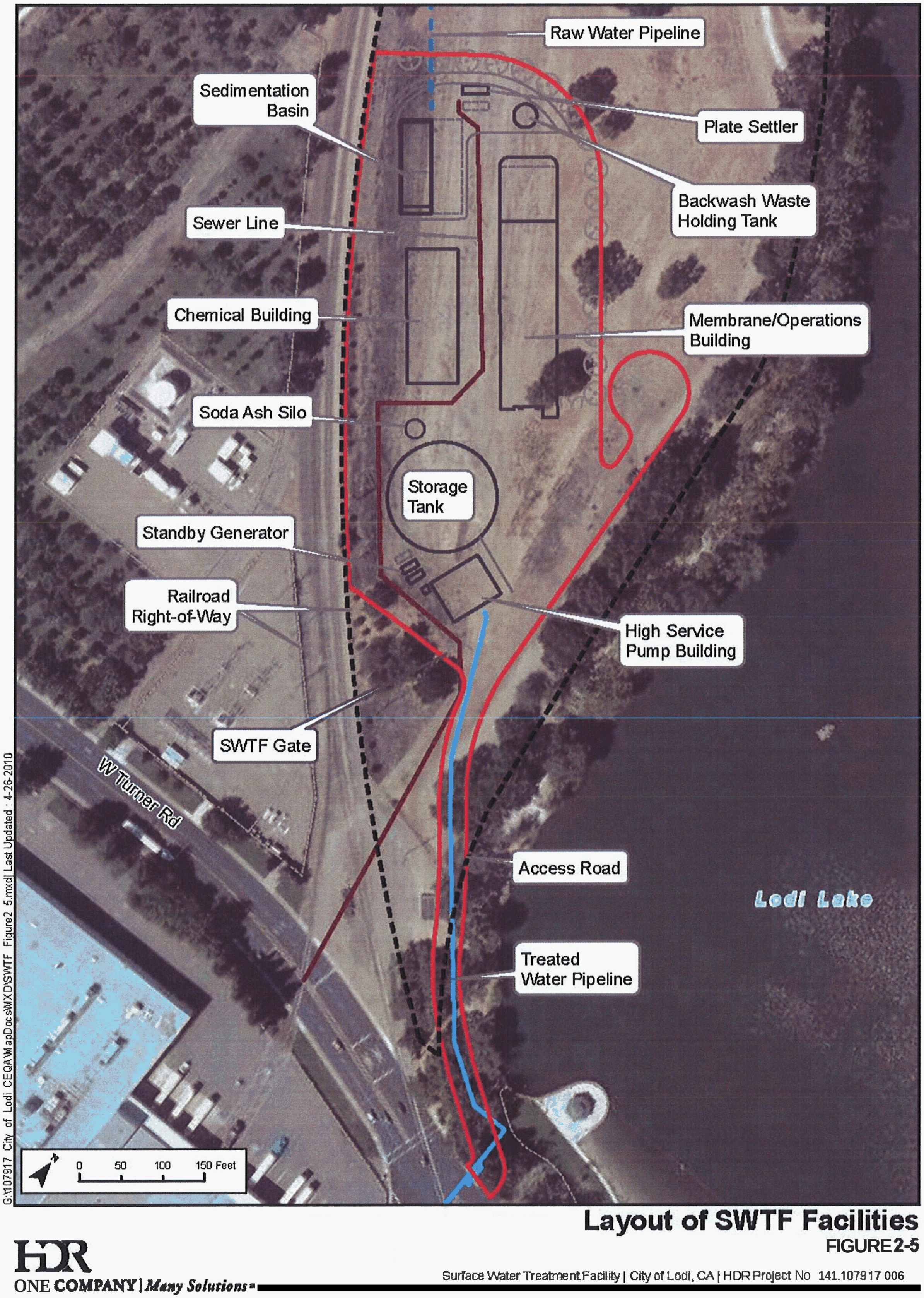

Figure 5. Layout of SWTF Facilities

Finished Water Storage Tank

The finished water tank would be a partially buried, prestressed concrete tank. The tank would serve as a storage tank for finished water at the SWTF, providing chlorine contact time to inactivate disease-causing organisms and storage of treated water prior to pumping into the City's water distribution system. The 130-foot-diameter tank would store three million gallons of water with three to four feet of free board. The inlet and discharge, and overflow pipes would enter and exit through the floor. The tank would be 35 feet in total height, with 25 to 28 feet above grade and seven to 10 feet below grade.

Soda Ash Silo

The soda ash feed system would consist of an outdoor silo that sits atop the feed equipment. The silo would hold approximately 30 days storage, which would be approximately 35 to 40 tons at build-out. The steel silo would have a standard diameter of 12 feet and a cylinder height of approximately 26 feet. A dust collector would be provided to prevent soda ash dust from leaving the silo. The soda ash silo would be located near the point where the treated water pipeline enters the concrete storage tank in order to minimize the length of chemical piping. The silo would be painted a neutral (tan or gray) color to match the other structures on the site.

Membrane Treatment

Membrane treatment components would include a sedimentation basin, autostrainers, membrane feed pumps, membrane modules, and ancillary support systems such as Clean-In-Place (CIP) and compressed air systems.

Sedimentation Basin

A sedimentation basin would protect the membranes from fine sand particles that could pass through the autostrainers. The basin would allow sufficient contact time for coagulation and settling of fine sand. The basin would be approximately 113 feet long by 35 feet wide and would handle 12 mgd at a water depth of 16 feet.

The basin would be split into three parts: inlet channel, sedimentation basin, and effluent chamber. After being injected with a pre-oxidant and coagulant, the raw water would enter a two-foot-wide inlet channel that would span the width of the basin. The inlet channel would be used to minimize turbulence and promote even flow distribution across the sedimentation basin. A sludge collector would be installed on the basin floor to collect and discharge settled particles directly to the sewer or to the backwash waste tank, which could reclaim the water by thickening the solids. The final section of the basin would include an eight-foot wide-effluent chamber that would supply the membrane feed pumps. The sedimentation basin could be divided in the future into a flocculation basin followed by inclined settling plates, if more aggressive pretreatment is required. Space would be reserved for a second basin upon future expansion.

Membrane Feed Pumps

Raw water from the sedimentation basin would feed the centrifugal membrane feed pumps housed in the Chemical Building. During the initial phase three 200-hp pumps would be installed (two duty; one standby) each having a capacity of 4,164 gpm (6 mgd) to provide a firm capacity of 12 mgd. Additional capacity would be provided in the future as required by adding a fourth pump (three duty; one standby) and replacing the 150-hp pumps with larger pumps, each having a capacity of 5,552 gpm.

The pumps would be designed to provide sufficient pressure through the autostrainers, membranes, and all piping and valves to the finished water storage tank. The associated suction and discharge isolation and check valves would be sized for the final phase conditions to make future pump installation more cost effective.

Autostrainers

Autostrainers would remove any large particles such as pine needles, leaves, or other items in the raw water influent that pass through the fish screens and sedimentation basin. Any particles of significant size could damage the membranes and decrease their treatment efficiency. Two strainers would be installed to meet the initial treatment capacity. Each autostrainer would have a screen opening size no greater than 400 microns and be equipped with an automatic cleaning system that would operate without the unit being taken out of service.

Membranes

Membranes would serve as the primary filtration in the production of finished water quality that would meet or exceed state and federal standards for drinking water. The SWTF would utilize a Pall Microza pressure membrane system that would pump water through the membranes under pressure. The membrane system would provide a positive barrier to bacteria and organisms such as Giardia and Cryptosporidium.

The membrane system would have an initial firm capacity of 8 mgd and a total capacity of 10 mgd net production capacity. The SWTF would be expandable to 20 mgd net production capacity. Four equally sized trains (2 mgd each) would be used to produce 8 mgd. A fifth train would be installed to provide firm capacity when one train would be out-of-service for cleaning and backwashing. All trains could operate to provide additional capacity.

Water and Sewer Pipelines

One 8-inch water service pipeline would connect to the existing 8-inch water line that runs along the east side of the proposed SWTF site. This line would provide potable water for each building, fire sprinklers, and onsite fire hydrants. Backflow prevention devices would be installed on the potable water service, fire service, and irrigation lines.

Sanitary sewer lines would be separated both vertically and horizontally from all water lines. Sanitary service from each building would be routed to the existing sewer main in Turner Road as indicated in Figure 5. The sewer line would be bored under the railroad tracks to Turner Road where it would connect to an existing manhole.

Stormwater System

Stormwater collection at the SWTF would comply with the City's Stormwater Management Program. Bordered areas in and around the plant would be filled with gravel as a structural best management practice (BMP). Culverts would direct runoff from interior borders to perimeter borders where catch basins would be placed. The borders would be excavated approximately six inches and backfilled with gravel material or decorative rock. The gravel would serve to reduce stormwater pollution and ongoing costs otherwise needed for vegetative landscape maintenance. Stormwater would percolate through the gravel into the ground. Periodically, when large volumes of stormwater are collected, the gravel would serve to filter the runoff prior to it entering the catch basins. Borders around the perimeter of the SWTF site would have trees to help screen the SWTF from the park. The storm drain system would connect to the existing stormwater pump station near the SWTF entrance.

Finished Water Main

The City's existing distribution system is typical of a groundwater-based system; incorporating 27 wells distributed across the system and connected by pipelines with diameters in predominantly 6-, 8-, and 10-inches. None of the existing pipelines are greater than 14-inches in diameter. As a result, the City's distribution pipelines do not have significant capacity to transmit large flows to or from any location. Therefore, four connections would be spread out among the existing water mains that are 8-inch diameter and larger. The four connection points for the SWTF would be on North Mills Avenue at Turner Road, Yosemite Drive, Lockeford Street, and Elm Street.

The finished water pipeline would be placed along the south side of the SWTF, parallel to the railroad tracks. The 3,200-foot-long, 36 inch transmission main would exit the SWTF and follow the access road to the intersection of Turner Road and North Mills Avenue, where it would tunnel under the railroad tracks and continue south along North Mills Avenue to Elm Street. In the future, the water transmission main would be extended south another 2,400 feet to West Lodi Avenue and continue west along West Lodi Avenue past Lower Sacramento Road to serve the development west of the Lower Sacramento Road.

Access Road

The SWTF would share an access road with future park land. The volume of traffic visiting the SWTF is expected to be minor. Most visitors are expected to arrive by automobile; however, a few large trucks would arrive for deliveries, construction, and maintenance.

The access road to the SWTF would extend northwest from the intersection of Turner Road and North Mills Avenue in the southeast corner of the City's property (Figure 6). The road would be 24-feet wide with four-foot wide shoulders. The intersection of Turner Road and North Mills Avenue would require signal modifications to accommodate a four-leg intersection.

An existing raised traffic island in the intersection would be removed to accommodate the northbound through movement from North Mills Avenue. New traffic signal equipment would be installed to operate the four leg intersection. The existing high voltage power pole would remain.

Currently, the traffic signals also function as the railroad crossing control signals. The City met with the California Public Utilities Commission (CPUC) and UPRR to determine if any changes to the crossing controls would be needed with the intersection improvements. Due to the low number of incidents at the intersection, the CPUC decided to allow the existing crossing controls to remain.

New crosswalk, curb ramps, and traffic signal poles with traffic and pedestrian signal heads would be added for the north leg of the intersection. The access road would be constructed from Turner Road along the lake (between the existing pedestrian/bicycle path and the stormwater pump station), which would necessitate the removal of mature trees and an earthen embankment. A few pathway lights and park benches along the path would be relocated to the lake side of the path. Lighting along the access road would be compatible with the existing park lighting design.

Figure 7 shows the existing view from Turner Road looking towards the lake. Figure 8 shows a conceptual image of the same view after the SWTF is built and the 12 oak trees (three valley oaks and nine interior live oaks) have been removed. Figure 9 shows a conceptual image of the SWTF as viewed from Turner Road once the SWTF has been constructed.

Well Modifications

The City's water system is currently supplied by groundwater from 27 well pump stations and a grid water main system (Figure 10). Well 27 will be constructed by 2011. Portable chlorination equipment consisting of a tank of 12.5 percent sodium hypochlorite solution and a small feed pump are used to chlorinate the well water on an as needed basis. Well 4R includes permanent chlorination facilities and would not require any modifications. All wells except for wells 2, 8, and 12 would be active and maintained for the lifetime of the SWTF. The City plans to decommission wells 2, 8, and 12 in the near future. The City's wells are listed in Table 1.

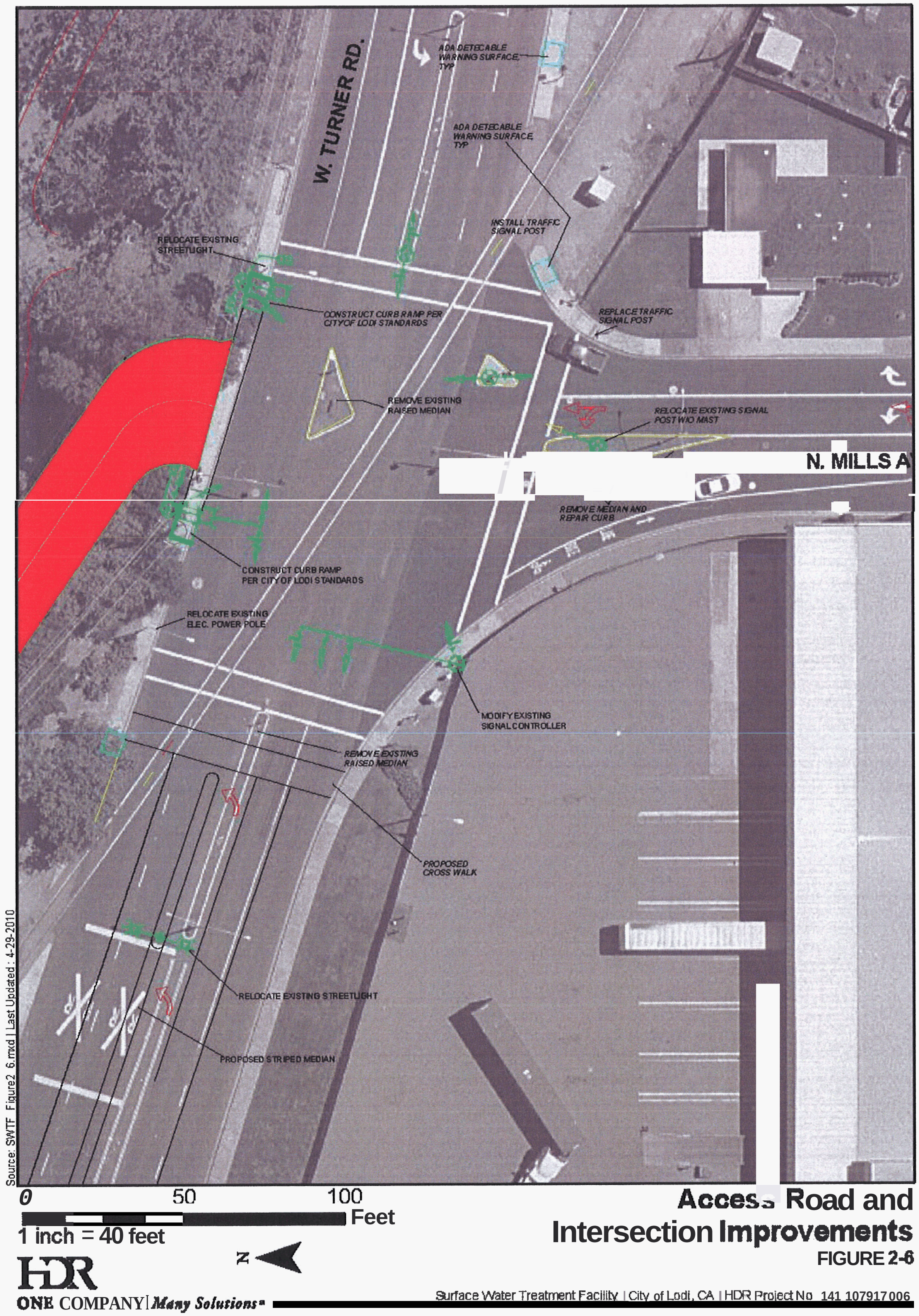

Figure 6. Access Road and Intersection Improvements

Figure 7. Existing Location of Entrance

Figure 8. S W F Entrance

Figure 9. SWTF as Viewed from Turner Road

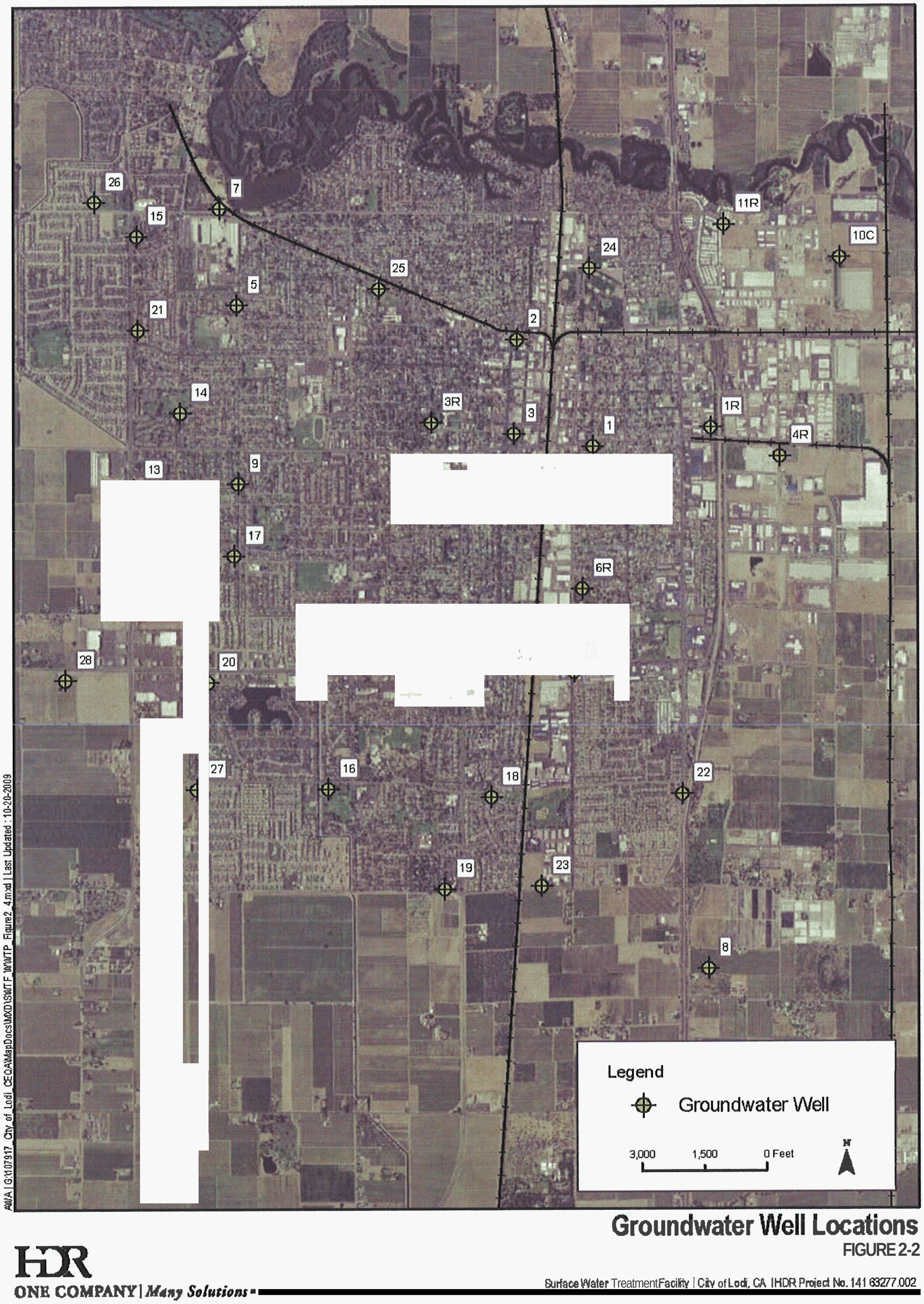

Figure 10: Groundwater Well Locations

Table 1. Existing Groundwater Wells

Well No.	Assumed Capacity, gpm	Add Chlorine Facilities	Comment
1R	1,130	Yes	
2	820	**No**	Decommissioning planned
3R	820	Yes	
4R[a]	1,960	**No**	Pumps directly to elevated storage tank. Station includes existing chlorination facilities.
5	1,180	Yes	
6R	1,580	Yes	
7	1,160	Yes	
8	800	**No**	Decommissioning planned
9	900	Yes	
10C	1,300	Yes	
11R	1,320	Yes	
12	800	**No**	Decommissioning planned
13	1,150	Yes	
14	1,670	Yes	
15	1,500	Yes	
16"	1,110	Yes	
17	1,800	Yes	
18[a]	1,800	Yes	
19	1,110	Yes	
20[a]	2,070	Yes	
21	2,050	Yes	
22[a]	1,400	Yes	
23[a]	1,410	Yes	
24	1,420	Yes	
25	1,580	Yes	
26	1,370	Yes	
27		Yes	
28		Yes	

[a] equipped with granular activated carbon

The need for existing groundwater well modifications arises from operational and regulatory requirements to accommodate the combined use of surface and groundwater supplies, water quality monitoring, and disinfection guidelines. In compliance with Title 22, Section 64650 et seq. of the California Code of Regulations, all utilities using surface water or any groundwater supply under the influence of a surface water supply must provide adequate disinfection. In order to comply with these rules, chlorination facilities would be added to each of the well sites.

Two federal regulations also affect the operation and structure of the City's water system. First, the introduction of the new surface water supply will require continuous chlorination of the groundwater supplies due to California regulations stemming from the U.S. Environmental Protection Agency's (USEPA's) Total Coliform Rule. This rule requires the maintenance of a detectable level of chlorine throughout a distribution system that contains surface water. Second, USEPA's Ground Water Rule requires sanitary surveys of groundwater supplies every 3 to 5 years and source water monitoring for coliform bacteria.

To ensure compliance with state and federal regulations, modifications to the existing groundwater distribution system would include the following:

- Chlorination of each groundwater supply to provide a minimum of 0.5 milligram per liter (mg/L) of residual chlorine at the entry point into the distribution system.
- Continuous monitoring of the chlorine residual at each distribution system entry point.

All groundwater supply facilities would be updated with permanent chlorination facilities. Continuous chlorination would require sodium hypochlorite tanks and an electronically controlled chemical feed pump monitored by an online chlorine residual analyzer and controlled by the well pump programmable logic controller (PLC). Because none of the well pumps in the City's system have variable-frequency drives, simple on/off control of the chemical feed pump would be sufficient.

A fiber-reinforced plastic (FRP) or high density polyethylene (HDPE) sodium hypochlorite storage tank, local SCADA system equipment, chemical feed pumps and PLCs, and chlorine residual analyzer would be housed in a FRP shed mounted on a concrete slab at each well site.

Taste and odor issues associated with chlorinating the groundwater supplies would be minimized by the use of high-quality sodium hypochlorite and maintaining the chlorine residuals in the well water at about 0.5 mg/L and in no case greater than 1.0 mg/L.

Construction

Construction is expected to take approximately 18 -24 months. A portion of the 12.75 acre site will be used for construction staging.

Concrete and CMU block would be the primary construction material for structures. Major process piping would be made of steel and ductile iron. The chemical storage tanks would be HDPE. The major construction phases for the SWTF and RWPS would be:

- Clearing and Grubbing
- Intersection Improvements
- Excavation and Sitework
- Structural Facilities
- Electrical, Process Mechanical, and Instrumentation
- Paving and Striping
- Architectural, Landscaping, and Security
- Startup and Testing

Excavation and Site Work

Youngdahl Consulting Group, Inc. completed a geotechnical report for the treated water pipeline, and SWTF and RWPS sites (HDR, 2010). Two to three feet of organic laden fill was encountered at the SWTF and RWPS sites that would need to be removed and replaced. Therefore, a geotechnical engineer would be on-site during all grading operations in case soft or undesirable soils would be encountered during excavation.

Approximately 5,000 cubic yards (CY) of soil would be excavated for construction of the storage tank and the soda ash silo. An additional 2,600 CY of soil would be excavated for the construction of the high service pump station, pipelines, and lakeside embankment. It is anticipated that some of the excavated soil would be suitable for use as fill elsewhere on the SWTF site. However, based on geotechnical data and the possibility of organics in the soil, the soil would require testing to meet specifications prior to use. Any excavated soil that would be unsuitable for fill would be placed around the remainder of the park site.

Fill

The Flood Insurance Rate Map (FIRM) for the Project area places the RWPS, SWTF, and pipelines outside of the 1OO-year floodplain. The Proposed Project is located in Zone X (unshaded), which is defined as an area of minimal flood hazard and above the 500-year flood level and protected by a levee from the 100-year flood. However, in order to provide proper onsite drainage for the SWTF, the entire site would be elevated to six inches above the 100-year floodplain elevation, which would require approximately 21,000 CY of fill. The 21,000 CY includes fill to replace the top soil that is recommend for removal.

Dewatering

During construction dewatering may be required for deep excavations due to the close proximity of the site to the Mokelumne River, WID canal, and Lodi Lake. California Department of Water Resources (DWR) well data indicate that seasonal groundwater levels in the Project area fluctuate between 24 and 30 feet below grade. Geotechnical investigations of the SWTF site measured groundwater at 34 feet below grade (HDR, 2008, 2010). A boring at the RWPS found groundwater at 19 feet below grade,

The higher level encountered at the RWPS site is influenced by the WID canal, which was full when the geotechnical investigation was conducted. The pump cans would be placed approximately 18 feet below grade. Even with WID restricting construction to the winter months when the canal is empty, the groundwater level could still be high enough to require dewatering at the RWPS site.

Structural Facilities

This phase would consist of compacting and preparing the soil for all structural facilities. Prior to pouring concrete, structural forms, *rebar*, and conduits would be installed for each facility. After the concrete is poured, it would be finished and cured before the forms would be removed. After the concrete footing, slab, and

Paving and Striping

All parking areas, roads, and designated locations would be paved and striped. Paving would be performed incrementally throughout the site area as large construction and non-rubber tread equipment are removed from the site.

Electrical, Process Mechanical, and Instrumentation

After the structures have been erected and roofed, electrical equipment (e.g., machinery control consoles, switchboards, lighting, etc.) would be installed. Site work such as installing pull boxes, conduits, and cables would continue.

Process mechanical equipment (e.g., pumps, mixers, and chemical injection systems) would be installed and piped through the process facilities. Site work would continue as small diameter chemical piping would be routed throughout the site.

After roofs on building and facilities are secured; flow meters, level probes, pressure meters, and other instrumentation such as process analyzers would be installed.

Architectural, Landscaping and Security

During the architectural phase, several specialized crews would apply finishes, tile and flooring, windows, paint, and wall fixtures.

Decorative fencing or a wrought iron style fence would be constructed where the SWTF is exposed to the park or otherwise visible from the street. On the side facing the railroad track, one-inch chain-link fencing, eight feet in height topped with three strands of barbed wire would be placed.

The SWTF would have three vehicular gates: the main entrance, delivery entrance, and a utility entrance. Motorized gates would be provided at both the main and delivery entrances. The main entrance would be located in the parking lot adjacent to the Operations Building. The delivery entrance would be located on the other side of the storage tank from the Operations Building and out of view. The utility gate would provide access for service or maintenance on the north side of the Operations Building. It would be a manual gate since its use would be infrequent and it would be normally locked. Manual gates would be provided at the parking lot in front of the administration offices to prevent park guests from using the SWTF's parking during weekends or after hours.

Landscaping within the facility would be kept to the perimeter to screen the SWTF and to minimize maintenance. Evergreen trees would be placed along the fence line facing the future park. Sixteen oak trees and one black locust trees would be removed in the construction of the SWTF and the access road. The trees removed would be mitigated with oak trees planted in the future park and at other city parks.

Startup and Testing

This final phase of construction would involve city personnel (i.e., operators, maintenance crews, and instrumentation specialists) working with the equipment vendors to understand how each piece of equipment would operate and function at the RWPS and the SWTF. Under city supervision, the equipment vendors would startup and test the equipment on-site to guarantee that pumps, mixers, gauges, SCADA system, and other operating equipment are functional and able to meet design standards. A 30-day performance test would be conducted to verify that the membranes would meet specified performance standards.

Staging Areas

Staging areas would be located on both the RWPS and SWTF sites and on future park land. The staging areas would store pipe, construction equipment, and other construction related items. The staging areas will be delineated on the project civil drawings. Staging areas would be used for the duration of construction.

Operations and Maintenance

The SWTF would operate continuously, 24 hours per day, every day of the year at various flow rates during the year with ongoing operations and maintenance. The process schematic for the SWTF is illustrated in Figure 11. Because the SWTF would be automated, it is anticipated that the City would retain a relatively small task force for day-to-day operations. Projected personnel would include a plant manager, two operators/general maintenance technicians, one specialty maintenance technician, one instrument technician, one half-time laboratory analyst, and one half-time administrative assistant.

It is anticipated that the staff would accept full operations and maintenance responsibility for both the existing groundwater facilities and the new surface water supply facility. Staff hours would be 6:00 am to 4:00 pm, Monday through Friday. Because the SWTF would not be continuously staffed, the staff would also be responsible for responding to emergency calls during unattended hours of operation. Staff hours and shifts may change as more experience is gained with plant operation.

Autostrainers

Raw water from the sedimentation basin would feed the membrane feed pumps housed in the Chemical Building. Autostrainers would remove any large particles such as leaves or other items in the raw water influent. Each autostrainer would be equipped with an automatic backwash system that would use city water to reverse flow through one portion of the strainer at a time to clear! it. The backwash waste stream from the strainers would be sent to the backwash waste tank for treatment with the membrane backwash water prior to recycle. The backwash frequency would depend on solids build-up and would be triggered by a differential pressure set point.

Membrane System

Water from the autostrainers would be pumped through the Pall membranes under variable feed pressure. As the water flows through the membranes, the membranes would eventually foul or clog. Two processes would be utilized to clean the membranes: (1) an air scrub in which compressed air would be injected through the membranes; and (2) a combination backwash, or reverse filtration, which would immediately follow the air scrub.

Two other processes would also be used to clean the membranes: (1) enhanced flux maintenance (EFM), and (2) clean-in-place (CIP). The EFM process would extend the time between CIPs. Depending on water quality and solids loading, the EFM would automatically occur either daily or weekly. During the process the membrane system would be drained and warm sodium hypochlorite solution would be introduced into the system. The solution would then circulate through the membrane feed to remove accumulated debris. After the process is complete, the solution would be drained and the membranes would be rinsed before normal operation resumes.

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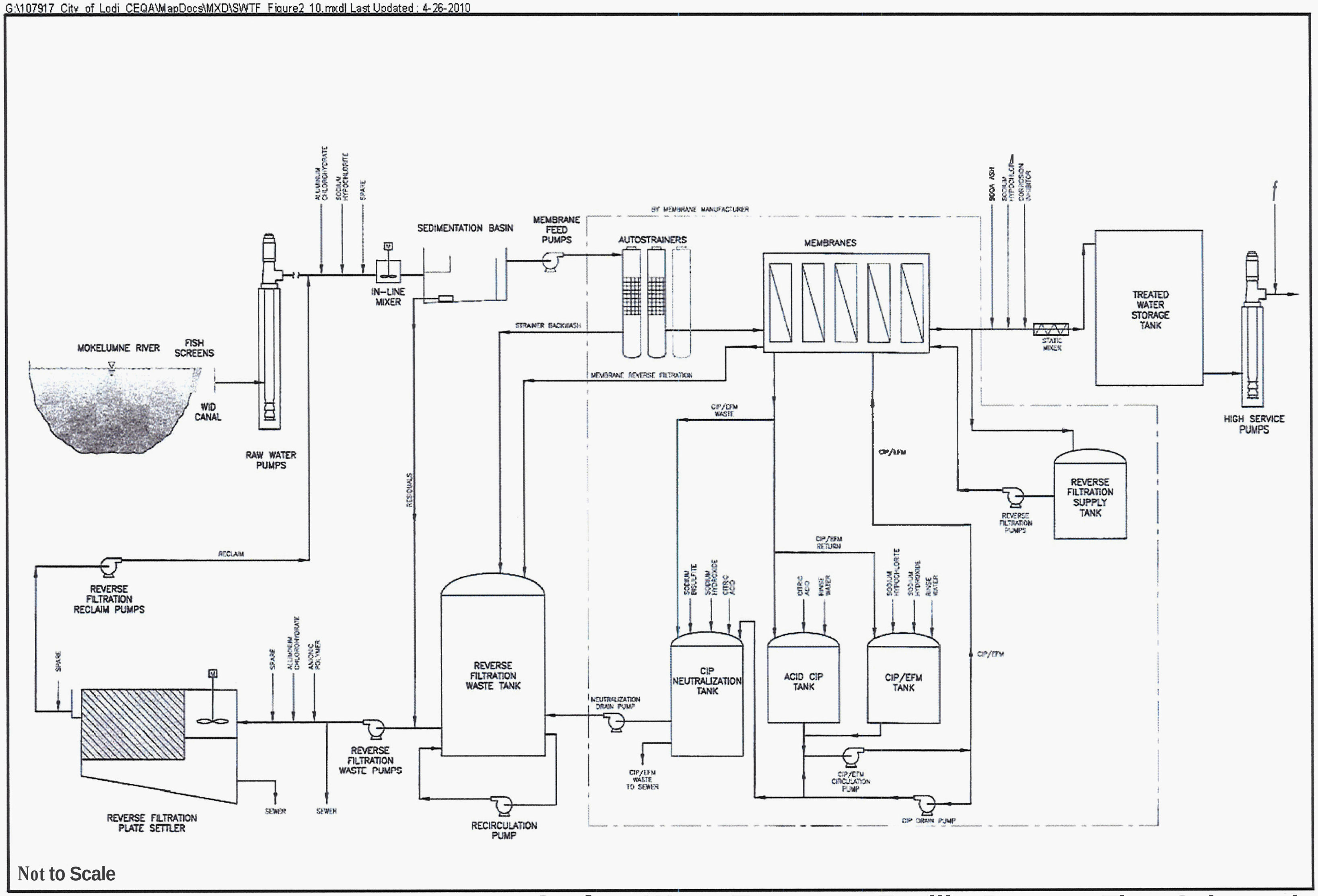


Surface Water Treatment Facility Process Flow Schematic

FIGURE 2-10

HDR ONE COMPANY | *Many Solutions*

Surface Water Treatment Facility | City of Lodi, CA | HDR Project No 141 107817006

Figure 11. Surface Water Treatment Facility Process Flow Schematic

Eventually the membranes may be unable to be cleaned via the reverse filtration or EFM processes. Therefore, to fully clean the membrane system, a CIP would be performed. The CIP process would occur every 30 to 90 days, and similar to the EFM wash, the frequency would be dependent on the raw water quality and membrane run time. The CIP process would be completed in two steps: (1) first, a wash in a solution of one percent sodium hydroxide and 1,000 mg/L sodium hypochlorite; and (2) followed by an acidic wash in a solution of two percent citric acid. After the CIP process, the membranes would go through a reverse filtration process.

Chemicals for Membrane Operation

Sodium hypochlorite, sodium hydroxide, citric acid, and sodium bisulfite would be used in membrane operations.

Sodium hypochlorite would be used to prepare batch make-up solution for the EFM and CIP cleaning processes. Due to the volume of sodium hypochlorite needed for EFM/CIP, it would be stored centrally in the Chemical Building with the sodium hypochlorite needed for pre-oxidation and disinfection. The Chemical Building would be kept cool during the summer by the HVAC system, which would help protect the sodium hypochlorite from deteriorating. The sodium hypochlorite would be stored in a HDPE tank; the piping material would be polyvinyl chloride (PVC). Sodium hypochlorite would be supplied as a 12.5 percent solution.

Applications of sodium hydroxide in the membrane cleaning process would include the pH adjustment of batch make up of the CIP/EFM system, which needs make-up water high in pH; and neutralization of the spent citric acid used for CIP of the membrane. Sodium hydroxide would be supplied *in solution form* up *to a* 50 percent concentration;

Citric acid would be primarily used in the CIP system. Citric acid solution would be circulated through the membranes to clean the membranes of any biological and colloidal fouling approximately once every three months. Citric acid would also be used for neutralization of spent sodium hydroxide solution used for removing fouling from the membranes. Citric acid would be supplied in liquid form as a 30 percent solution.

Sodium bisulfite would be used to neutralize any residual chlorine in the membrane unit after EFM. A 38 percent sodium bisulfite solution would be used.

Table 2 summarizes the chemicals to be used in the membrane system.

Table 2. Chemicals for Membrane System

Chemical	Parameter	Initial (8 mgd)	Final (20 mgd)
Sodium Hypochlorite	Number of Storage Tanks	1	2
	Storage Volume, each (includes EFM and CIP)	400 gallons	400 gallons
	Storage Tank Capacity (day tanks)	2 to 3 days	2 to 3 days
Sodium Hydroxide	Number of Storage Totes	1	2
	Storage Tank Volume, each	350 gallons	350 gallons
	Storage Tank Capacity	3 months	3 months
Citric Acid	Number of Storage Totes	1	2
	Storage Tank Volume, each	350 gallons	350 gallons
	Storage Tank Capacity	4 months	4 months
Sodium Bisulfite	Number of Storage Totes	1	2
	Storage Tank Volume, each	350 gallons	350 gallons
	Storage Tank Capacity	37 days	74 days

Chemical Systems

Sodium Hypochlorite

Sodium hypochlorite would be used at the SWTF for: (1) pre-oxidation of raw water; (2) disinfectant in the treated water storage tank and a chlorine residual in the distribution system; (3) to prepare batch make-up solution for EFM of the membranes; and (4) to prepare batch make-up CIP solution for the membranes.

The sodium hypochlorite storage tank would be located inside the Chemical Building, which would be kept cool during the summer by the HVAC system. Sodium hypochlorite would be delivered in a 12.5 percent solution for use as the primary disinfectant of raw water and in the filtrate to achieve 0.5-log Giardia disinfection in the treated water storage tank. Sodium hypochlorite would also be used to prepare batch make-up solution for EFM and CIP solutions for the membranes.

Aluminum Chlorohydrate

Aluminum chlorohydrate (ACH) would be used, if needed, as a coagulant in both the sedimentation basin for the removal of turbidity, suspended solids, total organic carbon, and color; and at the plate settler to assist in the solids removal.

Coagulant Polymer

An anionic polymer would be used in the reverse filtration recovery system to assist the ACH and enhance performance. Using polymer would lower the ACH dosage and provide more operational flexibility of the backwash recovery system.

Corrosion Inhibitor (Zinc Orthophosphate)

Zinc orthophosphate would be used for corrosion control when blending with groundwater. The storage tank would be located in the chemical storage area. The zinc orthophosphate would be injected upstream of the finished water storage tank before the high service pump station.

Sodium Carbonate (Soda Ash)

Soda ash would be required to adjust the alkalinity of the membrane effluent prior to entering the storage tank.

Powder Activated Carbon

Powdered activated carbon (PAC) was not included in the initial design; however, space has been reserved in the Chemical Building. In the future, PAC may be added to provide taste and odor control. PAC can be purchased and stored in bags, and fed as a powder using dry feed machines or using bulk liquid delivery and wet feed.

Table 3 summarizes the process chemicals to be used by the SWTF.

Table 3. Process Chemicals

Chemical	Parameter	Current (8 mgd)	Final (20 mgd)
Aluminum Chlorohydrate	Number of Storage Tanks	1	2
	Storage Tank Volume, each	4,000 gallons	4,000 gallons
	Storage Tank Capacity	45 days	45 days
Coagulant Polymer	Number of Storage Drums	1	1
	Storage Tank Volume, each	55 gallons	55 gallons
	Storage Tank Capacity	165 days	88 days
	Diluted Polymer Batch Tank Capacity	30 gallons	30 gallons
Sodium Hypochlorite	Number of Storage Tanks	1	2
	Storage Tank Volume, each[1]	6,000 gallons	6,000 gallons
	Storage Tank Capacity	30 days	30 days
Corrosion Inhibitor (Zinc Orthophosphate)	Number of Storage Totes	1	1
	Storage Tank Volume, each	1,000 gallons	1,000 gallons
	Storage Tank Capacity	80 days	32 days
Sodium Carbonate (Soda Ash)	Maximum Feed Rate	42 lb/hr	105 lb/hr
	Dry Chemical Usage	1,000 lb/day	2,500 lb/day

[1] Sodium hypochlorite storage includes volume for membrane CIP/EFM processes

Residuals Handling

Periodically (every 20 to 40 minutes), the membranes would go through a reverse filtration process to remove the accumulated solids and return the membranes back to their original operating pressure. In addition to the reverse filtration process, the membranes periodically would need a chemical cleaning to remove any scale or particulate matter that is not removed through reverse filtration. A CIP would also be used once every 1 to 2 months to remove the accumulated organic and inorganic scales. On a more frequent basis (once per day), the membranes would receive an EFM chemical cleaning to help extend membrane life.

After a reverse filtration sequence, the residual stream from the reverse filtration would flow to a waste tank, which would equalize the flow fed to the thickening system. Coagulant and small doses of polymer would be used as the thickener to efficiently separate the solids from the liquid stream. Thickened solids would be sent to the sewer for disposal. The water would then be recycled to the head of the plant. The treatment process would produce residual flows from membrane reverse filtration process and the CIP neutralization tank. The CIP and EFM spent chemical streams would be neutralized and sent directly to the sewer.

Project Cost

The estimated construction costs for the various elements of the project are summarized in Table 4. The total estimated project cost of $35.8 million includes construction, construction administration, inspection and testing services. This estimate is based upon 90% complete plans and specifications.

Land Purchase Cost

The surface water treatment facilities will utilize four acres of the 12.75 acres located west of Lodi Lake. The remainder 8.75 acres are comprised of the access road, pedestrian trail, earthen berm and a future group picnic area.

At the time of site selection, City Council directed staff to value the four acre site based upon a property appraisal. Rather than incur the cost of a site-specific appraisal, staff considered the recent appraisal prepared for the Tienda Drive Affordable Housing to be appropriate. That appraisal set that property value at approximately $287,500 per acre. Therefore, the value of the land at the surface water treatment facility would be $1,150,000.

Previous Expenditures

Over the past seven years since entering into the WID Water Purchase Agreement, the City has expended approximately $3.9 million in for the form of studies, staff costs and design of the Surface Water Treatment Plant Facilities. A partial listing of the expenditures is provided in Table 5 found on page 45.

The City Council will be asked to consider whether to reimburse itself from bond proceeds for these past expenditures.

Financing Options

The following presents excerpts from a memorandum prepared by Stone & Youngberg for this project.

Build American Bonds – The most dramatic market development of 2009 was the introduction of Build America Bonds (BABs). BABs can be used to finance tax-exempt-eligible projects at taxable interest rates with a 35% federal interest subsidy. The economic benefits of BABs vary with changing market conditions but can provide interest savings of 30 to 100 basis points, depending upon credit and maturities. The benefit of BABs tends to be greatest on longer maturities but the economics vary as market rates change.

Since the program's inception, more than 1,300 BAB issues totaling more than $100 billion have come to market, representing between 20% and 30% of overall municipal market issuance since last summer. While the very large issues have dominated market activity, the vast majority of issues (>70%) have been less than $50 million in size. As the program has gained greater market traction, so too have more traditional municipal structures – such as 10-year call features and serial amortization.

The primary drawbacks of BABs have been qualitative in nature. Specifically, BABs require additional administrative effort to secure the subsidy; the issuer or its agent would need to file payment requests for the federal subsidy between 45 and 90 days in advance of each semi-annual interest payment date over the life of the bonds. More importantly, the program does transfer legislative and tax risk from investors to issuers. Because the interest subsidy is treated like a tax refund, any unpaid federal tax liability of the issuer can be withheld from the subsidy payment. While this may be a larger concern for a state or county than for a city, the IRS did recently withhold a $1.2 million payment to the City of Austin and payments to the Los Angeles airport agency, both apparently due to disputed payroll taxes. The State of Florida recently announced its suspension of further BAB issuance due to concerns over tax liabilities. While the BAB program doesn't increase an issuer's tax liability to the federal government, it does increase the opportunities for IRS collection of any outstanding or future contested tax bills.

Revenue Bonds vs COPs – Most municipal utilities in California leverage water revenues through the issuance of either revenue bonds or certificates of participation (COPs). (The City's recent wastewater and electric utility financings have all been COPs.) From the City's perspective, the two structures are essentially the same. Many investors, however, prefer revenue bonds to COPs. Cities throughout California use COPs for general fund lease financings which are subject to annual appropriation and abatement (payments can be reduced if the city's use of the leased asset is diminished). As the financial condition of cities has deteriorated, many investors have come to shun general fund COPs. This aversion has tainted market perceptions of utility COPs – even though the underlying credit is quite different. In the current market, the interest rate "premium" investors may require for water COPs versus comparable water revenue bonds can add 10 to 20 basis points (bps) to the financing cost in the tax-exempt market. This penalty is even more pronounced in the taxable market where it can add as much as 30 to 40 bps to borrowing costs. To avoid this pricing penalty, the City could create a "joint powers authority" (JPA) between the City and its industrial development authority to serve as issuer for the bonds. The primary drawback of this approach would be the added annual cost to the City of an annual audit of the JPA. In our estimation, the potential interest rate savings on this and future City utility financings should far outweigh the audit costs.

	Job No.			Calc. No.	

Computation

Project:	Lodi Surface Water Treatment Facility	***Computed:***	MB
Subject:	Cost Estimate	***Date:***	6/8/2010
Task:	90% Design Cost Estimate	***Reviewed:***	RS
File Name:	*C:\Documents and Settings\mbeck\Local Settings\Temporary Internet Files\Content.Outlook\4307MTYM\[9C*	***Date:***	

DESCRIPTION		QUANTITY	UNITS	UNIT COST	TOTAL COST
DIVISION 1 - GENERAL REQUIREMENTS					
Mobilization		1	LS	1.00%	$284,600
Demobilization		1	LS	1.00%	$284,600
Bonds and Insurance		1	LS	2.00%	$575,100
Construction Facilities/Fencing/Offices		1	LS	1.50%	$429,100
Permitting (incl SWPPP)		1	LS	1.00%	$284,600
General Conditions		1	LS	2.00%	$575,100
Shop Drawings and O&M Manuals		1	LS	1.00%	$284,600
Facilities Start-up & Testing		1	LS	2.00%	$575,100
DIVISION SUBTOTAL					**$3,292,800**
DIVISION 2 - SITE WORK					
Turner Road Intersection and Site Access Roadway					
Railroad Crossing Improvements		1	LS	$200,000	$200,000
Traffic Lights and Island/Striping Changes		1	LS	$600,000	$600,000
Access Roadway Clearing and Grubbing		38,700	SF	$0.15	$5,805
Access Roadway Fill and Grading		1	LS	$100,000	$100,000
Access Roadway Paving		4,300	SY	$40	$172,000
Bore and Jack Pits		4	LS	$25,000	$100,000
SWTF Yard					
Site Fencing (Iron)		1,160	LF	$50	$58,000
Site Fencing (Omega)		650	LF	$37	$24,050
Manual Rolling Gate		3	EA	$5,000	$15,000
Motorized Swing Gate		1	EA	$10,000	$10,000
Manual Swing Gate		1	EA	$5,000	$5,000
3 FT Pass Gate		4	EA	$500	$2,000
Clearing and Grubbing		202,500	SF	$0.15	$30,375
Landscaping and Irrigation System		1	LS	$250,000	$250,000
Tree Removal		1	LS	$50,000	$50,000
AC paving (5 inch AC/6 in AB)		6,000	SY	$40	$240,000
RSP (6 in)		220	CY	$35	$7,700
Clearwell Excavation and Backfill		6,000	CY	$15.00	$90,000
Fill over Entire Site		7,500	CY	$5.00	$37,500
Final Grading		22,500	SY	$1.00	$22,500
Raw Water Pump Station					
Fencing		400	LF	$50	$20,000
Pump Can Excavation		150	CY	$30	$4,500
AC Paving		1,100	CY	$40	$44,000
Clearing and Grubbing		10,000	SF	$0.15	$1,500
Motorized Rolling Gate		1	EA	$10,000	$10,000
Chemical Building					
Structural Excavation		350	CY	$20	$7,000
Backfill and Compaction		100	CY	$10	$1,000
Operations Building					
Structural Excavation		450	CY	$20	$9,000
Backfill and Compaction		100	CY	$10	$1,000
High Service Pump Station Building					
Pump Can Excavation		200	CY	$20	$4,000
Backfill and Compaction		150	CY	$15	$2,250
Well Chlorination Facilities	# of Facilities				
Gravel Surfacing	24	10	CY	$50	$12,000
Sample Line	24	80	LF	$25	$48,000
Injection Line w/ Containment	24	40	LF	$50	$48,000
Waste Line	24	60	LF	$25	$36,000
Pipe Taps	24	2	EA	$250	$12,000
Miscellaneous	24	1	LS	$1,500	$36,000
DIVISION SUBTOTAL					**$2,316,180**
DIVISION 3 - CONCRETE					
SWTF Yard					
Treated Water Flow Meter Vault		1	EA	$15,000	$15,000
Inline Mixer Vault		1	EA	$15,000	$15,000
Chemical Injection Vault		1	EA	$15,000	$15,000

Table 4. 90% Design Cost Estimate

	Job No.		Calc. No.	

Computation

HDR

Project:	Lodi Surface Water Treatment Facility	**Computed:**	MB
Subject:	Cost Estimate	**Date:**	6/8/2010
Task:	90% Design Cost Estimate	**Reviewed:**	RS
File Name:	C:\Documents and Settings\mbeck\Local Settings\Temporary Internet Files\Content.Outlook\4307MTYM\[90	**Date:**	

DESCRIPTION		QUANTITY	UNITS	UNIT COST	TOTAL COST
Sample Manhole		1	EA	$5,000	$5,000
Sedimentation Basin		600	CY	$800	$480,000
Sedimentation Basin Residuals PS Manhole		1	EA	$7,500	$7,500
Sanitary Sewer Manhole		4	EA	$5,000	$20,000
Storm Drain Manhole		4	EA	$7,500	$30,000
Storm Drain Inlet		4	EA	$2,500	$10,000
Raw Water Pump Station					
Concrete Foundation		60	CY	$800	$48,000
Flow Meter Vault		1	EA	$15,000	$15,000
Chemical Building					
Concrete Foundation		360	CY	$800	$288,000
Operations Building					
Concrete Foundation		600	CY	$800	$480,000
High Service Pump Station Building					
Concrete Foundation		135	CY	$800	$108,000
Pump Foundation		10	CY	$800	$8,000
Well Chlorination Facilities	# of Facilities				
Concrete Pad	24	1	CY	$1,500	$36,000
DIVISION SUBTOTAL					**$1,580,500**
DIVISION 4 - MASONRY					
Included in Div. 13					$0
DIVISION SUBTOTAL					**$0**
DIVISION 5 - MISCELLANEOUS METALS					
SWTF Yard					
Miscellaneous Metals		1	LS	$20,000	$20,000
Stairway and Guardrail at SD Pump Station		1	LS	$10,000	$10,000
Raw Water Pump Station					
Miscellaneous Metals		1	LS	$10,000	$10,000
Chemical Building					
Miscellaneous Metals		1	LS	$30,000	$30,000
Operations Building					
Miscellaneous Metals		1	LS	$50,000	$50,000
High Service Pump Station Building					
Miscellaneous Metals		1	LS	$10,000	$10,000
DIVISION SUBTOTAL					**$130,000**
DIVISION 6 - WOOD AND PLASTICS					
Chemical Building					
FRP Chemical Containment Grating		1,000	SF	$38	$38,000
Trench Containment		1	LS	$10,000	$10,000
Operations Building					
Trench Containment and Grating		1	LS	$50,000	$50,000
DIVISION SUBTOTAL					**$98,000**
DIVISION 7 - THERMAL AND MOISTURE PROTECTION					
Included in Div. 13					$0
DIVISION SUBTOTAL					**$0**
DIVISION 8 - DOORS AND WINDOWS					
Raw Water Pump Station					
Roof Hatches (Pump Access)		4	EA	$1,600	$6,400
Single Exterior Door (incl. hardware)		3	EA	$2,500	$7,500
Single Interior Door (incl. hardware)		1	EA	$2,000	$2,000
Double Exterior Door (incl. hardware)		1	EA	$4,000	$4,000
Chemical Building					
Single Exterior Door (incl. hardware)		5	EA	$2,500	$12,500
Single Interior Door (incl. hardware)		3	EA	$2,000	$6,000

	Job No.			Calc. No.	

HDR

Computation

Project:	Lodi Surface Water Treatment Facility	*Computed:*	MB
Subject:	Cost Estimate	*Date:*	6/8/2010
Task:	90% Design Cost Estimate	*Reviewed:*	RS
File Name:	C:\Documents and Settings\mbeck\Local Settings\Temporary Internet Files\Content.Outlook\4307MTYM\[9C	*Date:*	

DESCRIPTION	QUANTITY	UNITS	UNIT COST	TOTAL COST
14' Roll-up Door	4	EA	$6,000	$24,000
10' Roll-up Door	1	EA	$4,500	$4,500
Double Exterior Door (incl. hardware)	4	EA	$3,500	$14,000
Miscellaneous Windows	1	LS	$7,500	$7,500
Operations Building				
Single Exterior Door (incl. hardware)	5	EA	$2,500	$12,500
Single Interior Door (incl. hardware)	17	EA	$2,000	$34,000
Double Exterior Door (incl. hardware)	6	EA	$4,000	$24,000
Double Interior Door (incl. hardware)	3	EA	$3,500	$10,500
14' Roll-up Door	1	EA	$6,000	$6,000
10' Roll-up Door	1	EA	$5,500	$5,500
Miscellaneous Windows	1	LS	$25,000	$25,000
High Service Pump Station Building				
Roof Hatches (Pump Access)	6	EA	$2,000	$12,000
Single Exterior Door (incl. hardware)	1	EA	$2,500	$2,500
Double Exterior Door (incl. hardware)	3	EA	$4,000	$12,000
DIVISION SUBTOTAL				**$232,400**
DIVISION 9 - FINISHES				
Painting and Protective Coatings (piping and equipment)	1	LS	$300,000	$300,000
DIVISION SUBTOTAL				**$300,000**
DIVISION 10 - SPECIALTIES				
Identification, Stenciling, and Tagging System	1	LS	$150,000	$150,000
Visitor Lobby Furnishings	1	LS	$20,000	$20,000
Office Furnishings	2	LS	$20,000	$40,000
Employee Lobby Furnishings	1	LS	$20,000	$20,000
Kitchen/Vending Furnishings	1	LS	$20,000	$20,000
Open Offices Furnishings	1	LS	$20,000	$20,000
Operations Furnishings	1	LS	$20,000	$20,000
Restroom Facilities	1	LS	$20,000	$20,000
Women's Locker Room Furnishings	1	LS	$20,000	$20,000
Men's Locker Room Furnishings	1	LS	$20,000	$20,000
Conference Room Furnishings	1	LS	$25,000	$25,000
Break Room Furnishings	1	LS	$25,000	$25,000
Lab Equipment and Furnishings	1	LS	$50,000	$50,000
Chemical Building Lavatory	1	LS	$5,000	$5,000
DIVISION SUBTOTAL				**$455,000**
DIVISION 11 - EQUIPMENT				
SWTF Yard				
Reverse Filtration Waste Tank	1	EA	$150,000	$150,000
Reverse Filtration Plate Settler	1	EA	$300,000	$300,000
Reverse Filtration Waste Tank Recirculation Pump	1	EA	$7,500	$7,500
Reverse Filtration Reclaim Pumps	2	EA	$20,000	$40,000
Reverse Filtration Waste Pumps	2	EA	$12,500	$25,000
Hoseless Sludge Collector	2	EA	$65,000	$130,000
Sedimentation Waste Pumps	2	EA	$5,000	$10,000
Soda Ash Feed System	1	LS	$420,000	$420,000
Hydropneumatic Tank	1	LS	$40,000	$40,000
Raw Water Pump Station				
Raw Water Pumps (50 hp, vertical turbine w/ can)	3	EA	$45,000	$135,000
Pump Can w/o Pump	1	EA	$15,000	$15,000
Chemical Building				
ACH Storage Tank	1	EA	$20,000	$20,000
ACH Metering Pumps	4	EA	$7,500	$30,000
ACH Process Piping	1	LS	$15,000	$15,000
Sodium Hypochlorite Storage Tank	1	EA	$20,000	$20,000
Sodium Hypochlorite Metering Pumps	3	EA	$7,500	$22,500
Sodium Hypochlorite Process Piping	1	LS	$15,000	$15,000
Polymer System	1	LS	$75,000	$75,000
Corrosion Inhibitor System (Tank and Pumps)	1	LS	$30,000	$30,000

	Job No.			Calc. No.

Computation

HDR

Project:	Lodi Surface Water Treatment Facility	**Computed:**	MB
Subject:	Cost Estimate	**Date:**	6/8/2010
Task:	90% Design Cost Estimate	**Reviewed:**	RS
File Name:	C:\Documents and Settings\mbeck\Local Settings\Temporary Internet Files\Content.Outlook\4307MTYM\[90	**Date:**	

DESCRIPTION	QUANTITY	UNITS	UNIT COST	TOTAL COST
Operations Building				
Pall Membrane System and Equipment	1	LS	$3,500,000	$3,500,000
Membrane Installation and Commissioning	1	LS	$420,000	$420,000
550-gallon CIP Chemical Totes (Steel Cage IBC) incl stand	4	EA	$7,500	$30,000
High Service Pump Station Building				
High Service Pumps (w/ cans)	3	EA	$64,000	$192,000
Pump Can w/o Pump	3	EA	$20,000	$60,000
Air Compressor and Receiver	1	EA	$12,000	$12,000
Well Chemical Feed/Electrical Improvements				
Equipment and Piping	24	EA	$50,000	$1,200,000
Electrical, Instrumentation and SCADA	24	EA	$25,000	$600,000
DIVISION SUBTOTAL				**$7,514,000**
DIVISION 13 - SPECIAL CONSTRUCTION				
SWTF Yard				
3.0 MG Clearwell (130 FT dia, partially buried)	1	LS	$2,750,000	$2,750,000
Hypalon Baffles	1	LS	$110,000	$110,000
Raw Water Pump Station				
Building Construction (not inc. concrete floor and foundation)	1,600	SF	$160	$256,000
Chemical Building				
Building Construction (not inc. concrete floor and foundation)	6,700	SF	$200	$1,340,000
Operations Building				
Building Construction (not inc. concrete floor and foundation)	14,800	SF	$200	$2,960,000
High Service Pump Station Building				
Building Construction (not inc. concrete floor and foundation)	3,500	SF	$160	$560,000
DIVISION SUBTOTAL				**$7,976,000**
DIVISION 14 - CONVEYING SYSTEMS				
Loading Dock and Ramp	1	EA	$20,000	$20,000
DIVISION SUBTOTAL				**$20,000**
DIVISION 15 - MECHANICAL				
Raw Water Pipeline				
30" RW Pipe (to SWTF Fencing)	450	LF	$360	$162,000
Treated Water Pipeline				
36" PW Transmission Main (From SWTF Fencing)	3,400	LF	$500	$1,700,000
48" Casing Bore and Jack	120	LF	$1,000	$120,000
SWTF Yard				
Storage Tank Underdrain System	1	LS	$15,000	$15,000
Filtrate Flow Meter	1	EA	$25,000	$25,000
24" Treated Water Flow Meter	1	EA	$30,000	$30,000
Raw Water Flow Meter	1	EA	$30,000	$30,000
Diesel Fuel Storage Tank	1	EA	$15,000	$15,000
Miscellaneous Site Piping and Valves	1	LS	$100,000	$100,000
Reverse Filtration Waste Pumps Piping and Valves	1	LS	$15,000	$15,000
Reclaim Pumps Piping and Valves	1	LS	$15,000	$15,000
Recirculation Pump Piping and Valves	1	LS	$6,000	$6,000
Inline Mixer	1	EA	$15,000	$15,000
18" Slide Gates	4	EA	$5,000	$20,000
30" Pipe	305	LF	$360	$109,800
30" x 8" Tee	1	EA	$6,000	$6,000
30" Tee	5	EA	$6,000	$30,000
30" BFV	5	EA	$10,500	$52,500
30" 90 degree Fitting	4	EA	$8,000	$32,000
30" 45 degree Fitting	2	EA	$11,000	$22,000
16" Piping	15	LF	$192	$2,880
16" 90 degree Fitting	1	EA	$2,750	$2,750
30" x 16" Reducer	1	EA	$4,000	$4,000
30" x 16" Tee	2	EA	$6,500	$13,000
30" x 24" Reducer	1	EA	$4,500	$4,500
24" Pipe	60	LF	$330	$19,800
36" x 24" Tee	1	EA	$6,500	$6,500

	Job No.			Calc. No.

Computation

HDR

Project:	Lodi Surface Water Treatment Facility	**Computed:**	MB
Subject:	Cost Estimate	**Date:**	6/8/2010
Task:	90% Design Cost Estimate	**Reviewed:**	RS
File Name:	*C:\Documents and Settings\mbeck\Local Settings\Temporary Internet Files\Content.Outlook\4307MTYM\[9(*	**Date:**	

DESCRIPTION	QUANTITY	UNITS	UNIT COST	TOTAL COST
36" Pipe	190	LF	$500	$95,000
36" x 24" Reducer	2	EA	$5,000	$10,000
24" BFV	2	EA	$9,000	$18,000
36" 45 degree Fitting	2	EA	$6,000	$12,000
36" 90 degree Fitting	5	EA	$6,000	$30,000
36" BFV	2	EA	$13,200	$26,400
36" x 14" Tee	1	EA	$6,500	$6,500
14" TW	35	LF	$168	$5,880
14" TW 45 degree Fitting	1	EA	$2,500	$2,500
14" BFV	1	EA	$3,500	$3,500
14" TW 90 degree Fitting	1	EA	$2,500	$2,500
Chemical Piping	1	LS	$10,000	$10,000
Sanitary Sewer and Waste Piping	1	LS	$15,000	$15,000
Plant Water and Fire Water Piping and Hydrants	1	LS	$25,000	$25,000
36" SD Pipe	420	LF	$195	$81,900
30" SD Pipe	70	LF	$170	$11,900
12" SD Pipe	480	LF	$105	$50,400
4" S Force Main Pipe	480	LF	$40	$19,200
14" Casing Pipe	190	LF	$500	$95,000
Raw Water Pump Station				
30" Blind Flange	2	EA	$1,500	$3,000
30" RW Pipe	85	LF	$360	$30,600
30" 90 degree Fitting	3	EA	$8,000	$24,000
18" FCA	3	EA	$3,000	$9,000
ARV	3	EA	$500	$1,500
18" Check Valve	3	EA	$9,000	$27,000
18" RW Pipe	20	LF	$160	$3,200
18" BFV	3	EA	$7,000	$21,000
30" x 30" x 18" Tee	3	EA	$6,250	$18,750
30" x 20" Reducer	2	EA	$4,000	$8,000
20" RW Pipe	15	LF	$300	$4,500
20" Flow Meter	1	EA	$15,000	$15,000
20" FCA	1	EA	$3,500	$3,500
24" RW Pipe	90	LF	$330	$29,700
36" RW Pipe	80	LF	$500	$40,000
Pipe Supports	1	LS	$10,000	$10,000
Pump Can	4	EA	$20,000	$80,000
Plumbing (included in Div. 13)				$0
HVAC System (included in Div. 13)				$0
Chemical Building				
30" RW Manifold with Pump Connections	50	LF	$500	$25,000
18" BFV	3	EA	$7,000	$21,000
18" Check Valve	3	EA	$9,000	$27,000
20" BFV	8	EA	$8,000	$64,000
20" 90 degree elbow	6	EA	$4,000	$24,000
20" x 10" Eccentric Reducer	3	EA	$2,500	$7,500
18" x 10" Reducer	3	EA	$2,000	$6,000
30" 90 degree elbow	4	EA	$8,000	$32,000
30" x 20" Tee	2	EA	$6,250	$12,500
30" x 20" Reducer	1	EA	$4,000	$4,000
20" Tee	6	EA	$3,500	$21,000
20" RW Piping	50	LF	$200	$10,000
Miscellaneous Process Piping and Valves	1	LS	$50,000	$50,000
Emergency Shower/Eyewash	4	EA	$3,000	$12,000
Plumbing (included in Div. 13)				$0
HVAC System (included in Div. 13)				$0
Operations Building				
Miscellaneous Process Piping and Valves (not incl by Pall)	1	LS	$75,000	$75,000
Miscellaneous Chemical Piping and Valves (not incl by Pall)	2	LS	$60,000	$120,000
Emergency Shower/Eyewash	4	EA	$3,500	$14,000
Plumbing (included in Div. 13)				$0
HVAC System (included in Div. 13)				$0
High Service Pump Station Building				
20" TW Pipe	160	LF	$300	$48,000
1 4 TW Pipe	20	LF	$200	$4,000
20" BFV	6	EA	$8,000	$48,000

	Job No.			Calc. No.

Computation

HDR

Project:	Lodi Surface Water Treatment Facility	*Computed:*	MB
Subject:	Cost Estimate	*Date:*	6/8/2010
Task:	90% Design Cost Estimate	*Reviewed:*	RS
File Name:	*C:\Documents and Settings\mbeck\Local Settings\Temporary Internet Files\Content.Outlook\4307MTYM\[9C*	*Date:*	

DESCRIPTION	QUANTITY	UNITS	UNIT COST	TOTAL COST
20" DMJ	12	EA	$500	$6,000
16" x 12" Reducer	3	EA	$2,200	$6,600
16" Silent Check Valve	3	EA	$8,500	$25,500
16" Gate Valve	3	EA	$3,300	$9,900
20" Blind Flange	3	EA	$800	$2,400
16" Blind Flange	3	EA	$500	$1,500
24" BFV	1	EA	$10,000	$10,000
36" TW Manifold (w/ Pump Connections)	50	LF	$500	$25,000
36" Blind Flange w/ Thrust Block	1	EA	$3,000	$3,000
36" x 24" Reducer	2	EA	$5,000	$10,000
36" x 20" Tee	6	EA	$14,000	$84,000
2" ARV	3	EA	$750	$2,250
Plumbing (included in Div. 13)				$0
HVAC System (included in Div. 13)				$0
DIVISION SUBTOTAL				**$4,234,310**
SUBTOTAL DIVISIONS 2 - 15				**$24,856,390**
DIVISION 16 - ELECTRICAL				
Miscellaneous Electrical (% of Div 2-15, minus 13)	13%	LS	$2,194,000	$2,194,000
SWTF Yard				
Standby Generator	1	EA	$300,000	$300,000
Site Lighting	1	LS	$50,000	$50,000
Site Security	1	LS	$100,000	$100,000
DIVISION SUBTOTAL				**$2,644,000**
DIVISION 17 - INSTRUMENTATION				
Miscellaneous Instrumentation (% of Div 2-15, minus 13)	4%	LS	$675,000	$675,000
DIVISION SUBTOTAL				**$675,000**

ONSITE CONSTRUCTION (LESS DIV 1) SUBTOTAL	$28,175,390
TAX (8.75% ON MATERIALS)	$1,232,673
SUBTOTAL2	$29,408,063
(ADDITIVE FOR) DIVISION 1 (ABOVE)	$3,292,800
SUBTOTAL3	$32,700,863
SUBTOTAL 4	$32,700,863
CONSTRUCTION SERVICES (6%)	$1,962,052
SUBTOTAL 5	$34,662,915
CONTINGENCY (02%)	$563,508
SUBTOTAL 6	$35,226,423
ESCALATION TO MIDPOINT OF CONSTRUCTION (2%)	$563,508
TOTAL	**$35,790,000**

Notes:
1. This cost opinion does not include any City connection fees or City administrative costs.
2. The contingency is for unknown items left out of the estimate because the design is not yet completed.

Table 5. Expenditures

PREVIOUSLY INCURRED COSTS

Laboratory Testing	$ 33,800
Conceptual Design and Feasibility Review (HDR)	$377,000
Preliminary Design and Environmental Review (HDR)	$ 858,000
Final Design, Plans and Specifications (HDR)	$ 1,737,000
Design Review (Ecologic)	$50,000
Financial Planning and Legal	$ 107,000
City Staff	$ 110,000
Raw Water Intake Pipe Construction	$ 572,000
Miscellaneous	$25,000
	$3,869,800

Call Features – Municipal bonds are typically sold with "call protection" to investors, restricting the timing of future refinancing. Most tax-exempt bonds are sold with a 10-year par call – meaning the issuer can refinance without penalty beginning 10 years after issuance. For taxable bonds, many investors prefer a "make whole call" feature which essentially eliminates the economic benefit of refinancing. Taxable bonds can still be sold with more flexible call features but often with a higher interest rate. In the current market, we estimate that the interest rate difference between a make-whole call feature and a 10-year par call feature on a taxable bond would be approximately 25 to 30 bps on the longer maturities. We recommend building both options into the legal documents for the City's financing but deferring the choice of call features until the time of sale.

Refunding of State loan – In the mid 1990s, the City borrowed approximately $3.3 million from the State Department of Water Resources Safe Drinking Water loan program. Those funds were used to construct water well facilities. Today, $1.4 million remains outstanding on the loan with semi-annual payments of principal and interest at a 3.41% interest rate through the October 1, 2017 maturity. The loan has a first lien on the net revenues of the water utility. The City could either: (i) seek State approval to issue its planned 2010 financing on parity to the State loan, (ii) structure the 2010 financing payable with a subordinate claim on revenues to the State loan, or (iii) pay off the State loan. Given the very modest payments involved, we think the 2010 financing could be payable after the SRF loan without any consequence to credit quality – thus avoiding the need for State approvals. In current market conditions, a refinancing of the State loan would be about a "wash" economically. Therefore, for simplicity's sake, we'd recommend paying the loan off.

Financial Model of Water Utility

August 6, 2008, Council approved the professional services agreement with The Reed Group, Inc. to prepare a Water Utility Financial Plan *to* address Rate Setting, Meter Installation Program, and Capital Expenditures within the water utility. This would be the first such model created for the Water Utility. It is an important tool used to understand the financial impact of ongoing projects including the infrastructure replacement program, PCE/TCE cleanup program, water meter installation program, and the surface water treatment plant.

A copy of the Draft Financial Plan Summary is provided as Table 6. A few highlights regarding the model are provided below.

Row 11 – Presents the total annual revenue to the Water Fund from all rates including usage, infrastructure replacement and PCE/TCE charges. In the model, all revenues flow through the 180 Fund except the water impact fees and the property owner meter payments.

Row 15 – Transfers from the Water Impact Mitigation Fee revenues collected from new development. The estimated capacity charge for the surface water treatment plant and other water facilities serving new development is approximately $5,600 per single family unit. The final Water Capacity Charge will be set via the Update to the Impact Mitigation Fee Program in 2012.

Row 18 – Annual Cost of Services transferred to Genera! Fund

Row 19 – Annual transfer of funds to the Capital Outlay Fund to cover the capital construction costs for the infrastructure replacement and meter program

Row 28 – North San Joaquin Water Conservation District annual assessment that can now be removed in the Final Financial Plan

Row 29 – Existing bonded debt through State Revolving Fund that will be recommended to be paid off through the Surface Water Treatment Plant Financing Plan.

Row 30 – Estimated annual debt service for a $43 million (net proceeds) bond sale for construction of the surface water treatment plant and reimbursement to the City for past expenditures.

Row 33 – Annual ending balance demonstrates that the revenues are sufficient to fund the water operations, infrastructure replacement, water meter program, and PCE/TCE capital construction and operations. The latter years' growth in fund balance is principally the result of transfers from the Water IMF fund (the result of new development) and lower than previously expected PCE/TCE expenditures.

	A	C	D	E	F	G	H	I	J	K	L	M
2	**City of Lodi -- Water Utility**											
3	**Financial Plan Summary**											
4		FY 09-10 Budget	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
5			2.0%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
6			Jan. 2011	Jan. 2012	Jan. 2013	Jan. 2014	Jan. 2015	Jan. 2016	Jan. 2017	Jan. 2018	Jan. 2019	Jan. 2020
64												
65	***Beginning Balance***	(442,341)	(854,000)	(713,000)	(957,000)	94,000	96,000	99,000	102,000	106,000	110,000	114,000
66	**Revenues**											
67	Water Impact Mitigation Fees	13,768	500,000	517,000	1,070,000	2,214,000	2,292,000	2,373,000	2,457,000	2,544,000	2,634,000	2,727,000
68	Interest Earnings	-	(9,000)	(11,000)	(19,000)	2,000	3,000	3,000	4,000	4,000	4,000	4,000
69	Total Revenues	13,768	491,000	506,000	1,051,000	2,216,000	2,295,000	2,376,000	2,461,000	2,548,000	2,638,000	2,731,000
70	**Expenditures**											
71	Vintner's Square		-				-	-	-	-	-	
72	Surface Water-Design		-				-	-	-	-	-	
73	Water Rate Setting		-				-	-	-	-	-	
74	GPS Control Grid		-				-		-	-	-	
75	Sacramento Street Water Main		-				-		-	-	-	
76	MSC Fleet Service Shop						-					
77	Well #27 - Pump, Motor & Site Impr.	400,000					-					
78	MSC Rehab/Expansion	25,000	350,000	750,000								
79	MWWI003-Well #28											
80	Transfer to Fund 180 For Debt Service					2,214,000	2,292,000	2,373,000	2,457,000	2,544,000	2,634,000	2,696,000
82	Total Expenditures	425,000	350,000	750,000		2,214,000	2,292,000	2,373,000	2,457,000	2,544,000	2,634,000	2,696,000
84	**Ending Balance**	**(854,000)**	**(713,000)**	**(957,000)**	**94,000**	**96,000**	**99,000**	**102,000**	**106,000**	**110,000**	**114,000**	**149,000**
	Owed Fund 180 For DS			1,879,000	3,756,000	3,421,000	3,008,000	2,513,000	1,933,000	1,269,000	666,000	
100												
101	**WATER PCE-TCE SETTLEMENT (184)**											
102	***Beginning Balance***	(241,630)	3,090,000	761,000	722,000	1,286,000	791,000	240,000	1,048,000	1,885,000	409,000	1,173,000
103	***Revenues***											
104	PCE-TCE Settlements	-	-									
105	Transfer In from Fund 180	-	-	600,000	1,200,000	1,500,000	1,500,000	1,500,000	1,500,000	2,500,000	1,500,000	1,500,000
106	Transfer In From Fund 183	15,600										
107	Transfer In from Fund 185	3,666,381										
108	Interest Earnings	-	31,000	11,000	14,000	32,000	24,000	8,000	37,000	66,000	14,000	41,000
109	Total Revenues	3,681,981	31,000	611,000	1,214,000	1,532,000	1,524,000	1,508,000	1,537,000	2,566,000	1,514,000	1,541,000
110	***Expenditures***											
111	PCE-TCE Remediation - Capital	-	1,760,000	-	-	1,377,000	1,425,000	-	-	3,292,000	-	-
112	PCE-TCE Remediation - O&M	250,000	600,000	650,000	650,000	650,000	650,000	700,000	700,000	750,000	750,000	750,000
113	Water PCE-TCE Legal	100,000										
114	Transfer to Fund 183	-										
115	Past Expenditures											
117	Total Expenditures	350,000	2,360,000	650,000	650,000	2,027,000	2,075,000	700,000	700,000	4,042,000	750,000	750,000
119	***Ending Balance***	**3,090,000**	**761,000**	**722,000**	**1,286,000**	**791,000**	**240,000**	**1,048,000**	**1,885,000**	**409,000**	**1,173,000**	**1,964,000**
120												
135												
145												
146												
147												
148		**13,469,170**	**<-- Funds 180, 181, and 182**									
150		**15,091,752**	**<-- Funds 183, 184, 185, 190, 191, 192, 193, & 194 at 6/30/09 (cash and investments) -- NOT INCLUDED IN MODEL**									
152		**28,560,922**	**<-- All Water Funds at 6/30/09**									

	A	C	D	E	F	G	H	I	J	K	L	M
2	***City of Lodi -- Water Utility***											
3	***Financial Plan Summary***											
4		**FY 09-10 *Budget***	**FY 10-11**	**FY 11-12**	**FY 12-13**	**FY 13-14**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
5												
6												
9	***Beginning Balance***	**2,071,982**										
10	***Revenues***											
11	Water Sales	6,793,974	12,137,000	12,527,000	12,915,000	13,344,000	13,644,000	14,184,000	14,784,000	15,478,000	16,198,000	16,949,000
12	Infrastructure Replacement	2,384,556										
13	Interest Earnings	79,200	29,000	101,000	151,000	120,000	123,000	124,000	117,000	141,000	144,000	204,000
14	Other Revenues	115,000	381,000	393,000	404,000	416,000	428,000	440,000	453,000	467,000	481,000	496,000
15	Transfer from Fund 182 for DS					2,214,000	2,292,000	2,373,000	2,457,000	2,544,000	2,634,000	2,696,000
16	Total Revenues	9,372,730	12,547,000	13,021,000	13,470,000	16,094,000	16,487,000	17,121,000	17,811,000	18,630,000	19,457,000	20,345,000
17	***Expenditures***											
18	Transfer Out to Gen'l Fund (COS)	1,060,122	1,060,000	1,060,000	1,060,000	1,060,000	1,060,000	1,060,000	1,060,000	1,060,000	1,060,000	1,060,000
19	Transfer Out to Wtr Cap Outlay	2,384,556	2,500,000	2,500,000	4,000,000	4,000,000	4,000,000	4,000,000	3,500,000	3,500,000	3,500,000	3,500,000
20	Transfer Out to PCE-TCE Fund			600,000	1,200,000	1,500,000	1,500,000	1,500,000	1,500,000	2,500,000	1,500,000	1,500,000
21	Administration & Other	1,132,313	1,197,000	1,240,000	1,284,000	1,330,000	1,377,000	1,426,000	1,476,000	1,529,000	1,584,000	1,641,000
22	Water Production	696,160	657,000	680,000	704,000	729,000	754,000	780,000	808,000	836,000	866,000	896,000
23	Electricity	780,000	690,000	721,000	753,000	787,000	822,000	859,000	898,000	938,000	980,000	1,024,000
24	DBCP Monitoring	294,780	263,000	272,000	280,000	289,000	298,000	307,000	316,000	326,000	336,000	347,000
25	SWTF Oper. & Maint. (net)				1,716,000	1,788,000	1,870,000	1,942,000	2,030,000	2,491,000	2,214,000	2,313,000
26	Water Distribution	798,742	812,000	841,000	871,000	902,000	934,000	968,000	1,002,000	1,038,000	1,076,000	1,115,000
27	WID Water Purchases	1,212,000	1,236,000	1,273,000	1,311,000	1,350,000	1,391,000	1,433,000	1,476,000	1,520,000	1,566,000	1,613,000
28	1991 CSDW Loan Payments	228,024	228,000	228,000	228,000	228,000	228,000	228,000	238,000			
29	Estimated 2010 COP Payments			2,818,060	2,815,935	2,818,435	2,818,235	2,817,160	2,815,210	2,819,435	3,046,860	3,044,546
30	Total Expenditures	8,586,697	8,643,000	12,233,060	16,222,935	16,781,435	17,052,235	17,320,160	17,119,210	18,557,435	17,728,860	18,053,546
32	***Ending Balance***	**2,858,000**	**6,762,000**	**7,549,940**	**4,797,005**	**4,109,570**	**3,544,335**	**3,345,175**	**4,036,965**	**4,109,530**	**5,837,670**	**8,129,124**
33	Operating Reserve (25%)	1,551,000	1,536,000	2,283,000	2,756,000	2,820,000	2,888,000	2,955,000	3,030,000	3,139,000	3,182,000	3,263,000
34	Available Balance	1,307,000	5,226,000	5,266,940	2,041,005	1,289,570	656,335	390,175	1,006,965	970,530	2,655,670	4,866,124
35	**DS Coverage (min. = 1.20)**	**16.23**	**31.68**	**3.74**	2.79	**3.21**	**3.24**	**3.32**	**3.43**	**3.83**	**3.33**	**3.56**
36												
37	**WATER CAPITAL OUTLAY (181)**											
38	***Beginning Balance***	**11,839,529**	9,962,000	44,183,000	10,885,000	7,510,000	5,311,000	1,121,000	3,000	4,981,000	10,123,000	13,718,000
39	***Revenues***											
40	Operating Transfers In	2,384,556	2,500,000	2,500,000	4,000,000	4,000,000	4,000,000	4,000,000	3,500,000	3,500,000		
41	Interest Earnings	88,200	100,000	663,000	218,000	188,000	159,000	39,000		174,000		
42	Retrofit Meter Install. Charge			3,297,000	1,719,000	1,719,000	1,719,000	1,719,000	1,719,000	1,719,000		
43	DBCP Reimb. & Other	200,000										
44	Debt Proceeds		43,021,000									
45	Total Revenues	2,672,756	45,621,000	6,460,000	5,937,000	5,907,000	5,878,000	5,758,000	5,219,000	5,393,000	3,854,000	3,980,000
46	***Expenditures***											
47	Water Meter/Main Install. Project	582,000	2,852,000	7,436,000	6,890,000	7,888,000	9,842,000	6,582,000				
49	Water Taps	75,000	78,000	80,000	83,000	86,000	89,000	92,000	95,000	99,000	102,000	106,000
50	Miscellaneous Water Mains	50,000	52,000	54,000	55,000	57,000	59,000	61,000	64,000	66,000	68,000	71,000
51	Commercial Meter Replacements	15,000	10,000	11,000	6,000	6,000	6,000	6,000	6,000	7,000	7,000	7,000
52	Valve Exercising Program	20,000	21,000	21,000	22,000	23,000	24,000	25,000	25,000	26,000	27,000	28,000
53	Surface WTP Design	2,946,000										
54	Raw Water Transmission Main	787,000										
55	Calif./St. Claire Water Main											
56	Surface WTP Construction		8,280,000	32,137,000	2,217,000							
57	UWMP Update		52,000					61,000				
58	Vehicles/Equipment	75,000	55,000	19,000	39,000	46,000	48,000	49,000	51,000	53,000	55,000	56,000
60	Total Expenditures	4,550,000	11,400,000	39,758,000	9,312,000	8,106,000	10,068,000	6,876,000	241,000	251,000	259,000	268,000
62	***Ending Balance***	**9,962,000**	**44,183,000**	**10,885,000**	**7,510,000**	**5,311,000**	**1,121,000**	**3,000**	**4,981,000**	**10,123,000**	**13,718,000**	**17,430,000**

Row 34 – The Financial Model includes an operating reserve of 25%. This is a common industry standard.

Row 41 – Matches the transfer from Row 19 to fund the capital improvements and the surface water treatment facility debt service. This is presented as a revenue.

Row 43 – Revenue generated from property owners' payments for meters. The FY 11-12 revenue is higher because it includes an assumed 30% lump sum meter payments by property owners plus the first year's installment payments. The remainder of the $13 million in property owners' meter payments is assumed to be amortized over a seven year period at an interest rate equal to the Local Agency Investment Fund plus one percent.

Row 48 – Expenditures for the water meter program consultants and construction activity.

Row 57 – Capital expenditures for construction of the surface water treatment facilities.

Row 68 – Revenues from the payment of capacity fees are quite limited in the early years and relatively modest in FY 2013/14 and beyond.

Row 85 – The IMF Water Fund balance is negative for several years until the level of development increases to restore the positive fund balance.

Rows 112 & 113 – The level of expenditures on the PCE/TCE Cleanup Program is relatively modest but is in line with the near term Central Plume activities approved by the Regional Board. However, substantial uncertainty exists that can only be removed after written agreements with the Regional Board have been approved.

Row 120 – The Financial Model assumes the PCE/TCE fund balances that reach a peak of negative $12,291,000 are offset by the positive balance in the Settlement Funds that exceeds $14 million. The Settlement Fund information is not shown in the Financial Plan Summary.

PCE/TCE Cleanup Program

The PCE/TCE Cleanup Program has entered the first phase with construction of facilities beginning soon to remove PCE from the Central Plume area bounded by Church, Oak, Pleasant and Pine Streets. Although progress on this phase has been slow, it has allowed staff to continue working with the Regional Board on a number of different issue areas. We have received approval of the Action Plan for the Central Plume first phase remediation work. In the course of working through the Action Plan, we have begun discussions with the Board that potentially would allow the City to be self-regulating of its cleanup activity. Monitoring and reporting to the Board would continue in its current form.

In addition, we are presently preparing a Work Plan for submittal to the Board relating to the South Central/Western and Southern Plumes. The Work Plan will propose that the City "monitor natural attenuation" in these areas. This will involve the construction of additional monitoring wells and quarterly sampling and reporting to the Board. Most importantly, the City would not be required to construct extraction wells and treatment facilities in these areas and, as a result, the City could save considerable costs. The assumed expenditures for the PCE/TCE Cleanup Program are presented in Rows 112 and 113 of Table 6.

The City's responsibility in the Northern Plume Settlement Agreement is to clean up the groundwater. Further investigation is required to establish an appropriate Work Plan for this area. However, new groundwater test results for PCE /TCE indicate the concentrations to be far lower than previously represented – remember that no testing results for this area were provided to the City in the past.

Infrastructure Replacement/Water Meter Program

City Council decided to install residential water meters throughout the City over a five year period (2011 – 2015) and, at the same time, construct replacement water mains for the remaining two, three, and four inch diameter water mains located in back yards. The total length of new water main construction includes over 22.5 miles. The total number of residential water meters to be installed includes over 13,000 meters. The estimated construction expenditures for the Water Meter Program are presented in Row 48 of Table 6 and the estimated property owner payments (revenues) are presented in Row 43.

The construction cost of the combined infrastructure replacement program and the residential water meter program will total approximately $34 million with approximately $13 million of the cost being borne by residential property owners. The decisions by Council in this area have allowed fairly concise planning of capital expenditures for the period between 2011 and 2015. As a result, the water utility financial plan is relatively accurate in this area.

Phasing of the water meter program is presented in Figure 12. Approximately 12 field interns, the majority of whom are college students living in Lodi, are busily collecting parcel-specific data in support of the design phase of the annual construction projects. This information will also be used to notify property owners regarding their costs for the meter installation (ranges from $300 to $1,200) and their option to prepay prior to June 30, 2011 or choose the installment plan beginning July 1, 2011.

Each phase of the water meter program will include an application period for very low and low income families to seek funding assistance for their meter installation. The details of this aspect of the program are still in development.

A future expansion of the water meter program will include installation and replacement of water meters for non-residential customers. This customer class includes industrial, commercial, multi-family apartments, churches, schools, and others. As many of these customers are already metered, an important component of this phase of the water meter program will be the replacement of older meters that have a tendency to under-record the water usage.

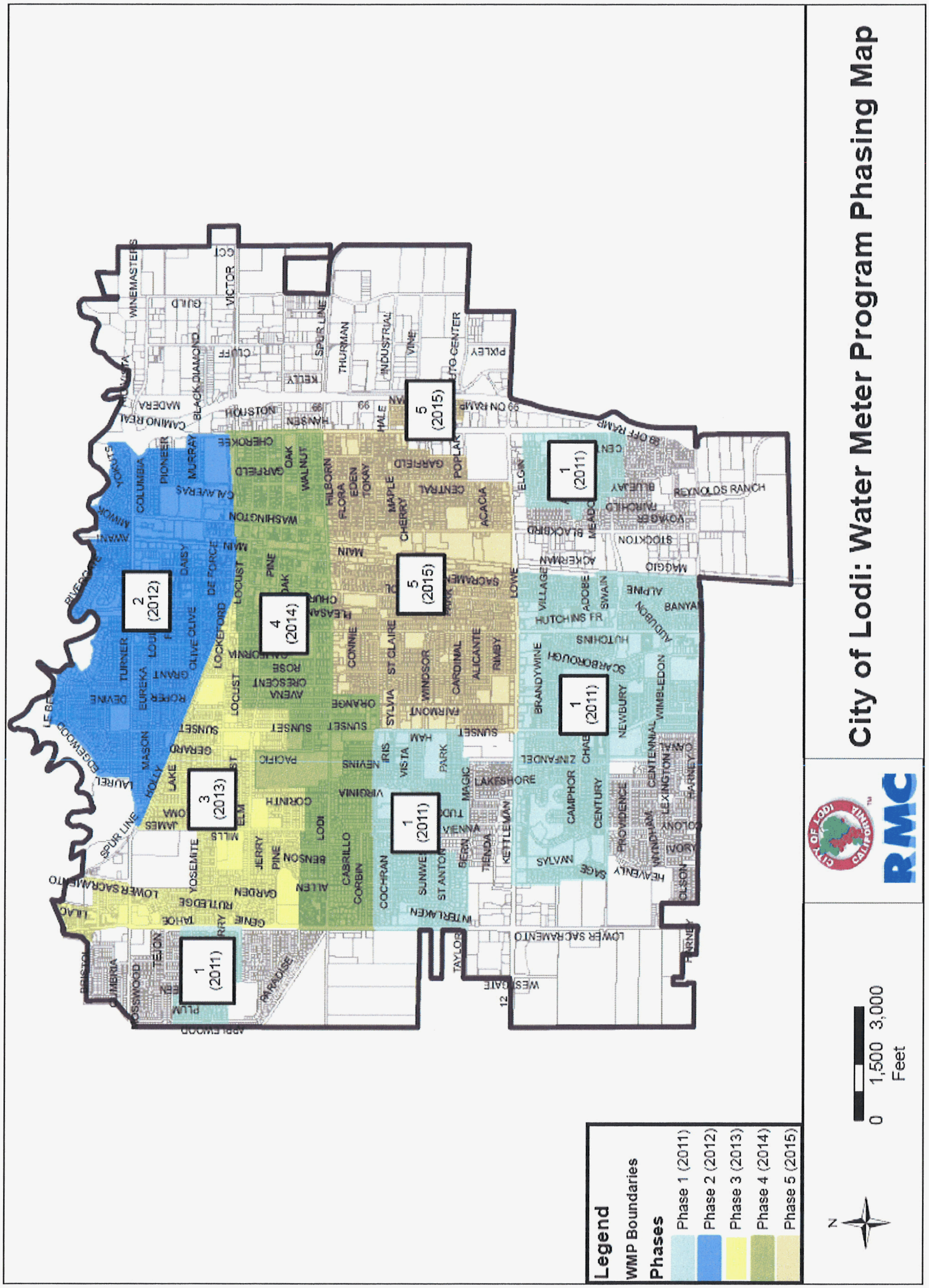


Figure 12. Surface Water Treatment Facility Process Flow Schematic

Rate Adjustments

At the July 21, 2010 Council meeting, a Public Hearing will be held to consider usage based water rates that include a recommended two percent increase for the period from July 2009 through December 2010. The recommended increase is based upon the change in the Engineering News Record Index over the same period. It is recommended that a similar two percent increase be applied to the flat rates residential rates. In addition, the usage charge for non-residential customers will increase from $.789 to $.88 per hundred cubic feet.

Annual rate increases of three and a half percent have been included in the Water Utility Financial Plan based upon forecasts of expected increases in the ENR Index. Future increases will be based upon actual changes in the ENR Index.

One of the recommended changes to the usage based rates reduces the monthly fixed rate component (meter sizes one inch and smaller) of the non-residential rates to be the same as the residential rates. Over the next several months, staff will be recommending increases to the non-residential monthly fixed rate charges for meter sizes of one inch and larger. It is expected the recommendations will present substantial increases to the monthly fixed rate component of the fee for these customer classes. Approximately 19 percent of the revenue is generated from this non-residential customer class.

Surface Water Treatment Plant Financing Plan

The Surface Water Treatment Plant project is nearing completion of the final plans and specification. The Council will be asked to approve the project for bidding on July 21, 2010. The current estimated construction cost is $35.8 million not including funds aireaay expended.

Most municipal utilities in California leverage water revenues through issuance of either revenue bonds or certificates of participation (COPs). From the City's perspective, the two structures are essentially the same. Many investors, however, prefer revenue bonds to COPs. As the financial condition of cities has deteriorated, many investors have associated COPs with general funds, even though the issue is backed by utility revenues. In the current market, the interest rate "premium" investors may require for water COPs versus comparable water revenue bonds can add 10 to 20 basis points to the financing cost in the tax-exempt market. To avoid this pricing penalty, the City could create a "joint powers authority" between the City and its industrial development authority to serve as issuer for the bonds.

As previously discussed, BABs have been shown to be cost effective for longer term maturities. The recommended financing plan for the surface water treatment plant will probably be a blend of BABs and revenue bonds. The debt service figures in the Draft Summary Financial Plan (Table 6) conservatively present a mix of BABs and revenue bonds to finance construction of the surface water plant.

In the mid-1990s, the City borrowed approximately $3.3 million from the State Department of Water Resources Safe Drinking Water loan program. Today, $1.4 million remains outstanding on the loan with semi-annual payments of principal and interest at a 3.41 % interest rate. It is recommended this loan be paid off from available cash or through the financing.

The essence of a water financing is the City's promise to charge rates sufficient to generate minimum threshold of debt service coverage from net system revenues. Typical minimum coverage ratios range from 110% to 150% for most utilities, depending upon the enterprise's credit, desired ratings and need for debt capacity. A recommended coverage ratio will be presented following a more detailed review of the rate model. The coverage ratio for the 2007 Wastewater Bonds is 110%. The coverage ratio used for the water fund model is shown on Row 36 in Table 6.

New Development Share Of Costs

At the present time, existing water customers are provided high quality water on a highly reliable basis. The annual demand of the existing customers averages around 17,000 acre feet. The estimated annual safe yield of the groundwater aquifer underlying the City is 15,000 acre feet. The existing customer base is being served but only by over pumping the groundwater resource by 2,000 acre feet per year. At present, it is planned to reduce the long term pumping of groundwater by committing a minimum of 2,000 acre feet per year of the WID water to cure the current overdraft condition.

The WID Agreement provides the City with 6,000 acre feet per year. One could argue that 4,000 acre feet per year are designated for future development. For the Westside Annexation and the Southwest Gateway Annexation, the City committed approximately 1,650 acre feet per year to serve the water demands for these projects. For the Reynolds Ranch Annexation, approximately 500 acre feet per year were committed to serve the demands of this project. The remaining 1,850 acre feet per year of the WID water is uncommitted.

Staff recommends that the new development share of the surface water treatment plant facilities be set at 66.7% (4,000/6,000 x 100) and existing customers share be set at 33.3% (2,000/6,000 x 100).

New Development Capacity Charge

A very preliminary calculation of the approximate capacity charge has been determined to be $5,600 per equivalent dwelling unit. The actual charge will be set in latter 2011 as part of the new Impact Mitigation Fee Program. The actual charge will be based upon the demand for water service for the various types of uses that will develop in Lodi in the future. For perspective, other communities in the region with surface water treatment plants have capacity charges in the range of approximately $3,560 to $6,380.

New Development Debt Service

As is currently the condition with the 2007 Wastewater Bonds debt service, the rate of development in Lodi does not generate sufficient cash to pay its portion of the total debt service payments or about $2.7 million per year. As a result, the City Council decided to have the rate payers commit to making the debt service payments with new development contributing what it can when it can.

The same condition will exist for the water treatment plant financing plan. This condition can be found in the Draft Financial Plan Summary on Row 30 (Estimated 2010 COP Payments) and Row 68 (Revenue Water Impact Mitigation Fees). If new development is responsible for paying 66.7% of the debt service, or $1.88 million per year, there will not be sufficient funds to make a full payment for several years and the 10 year average annual impact fee revenues are only slightly over $1.93 million.

The City of Lodi

Public Works

Engineering

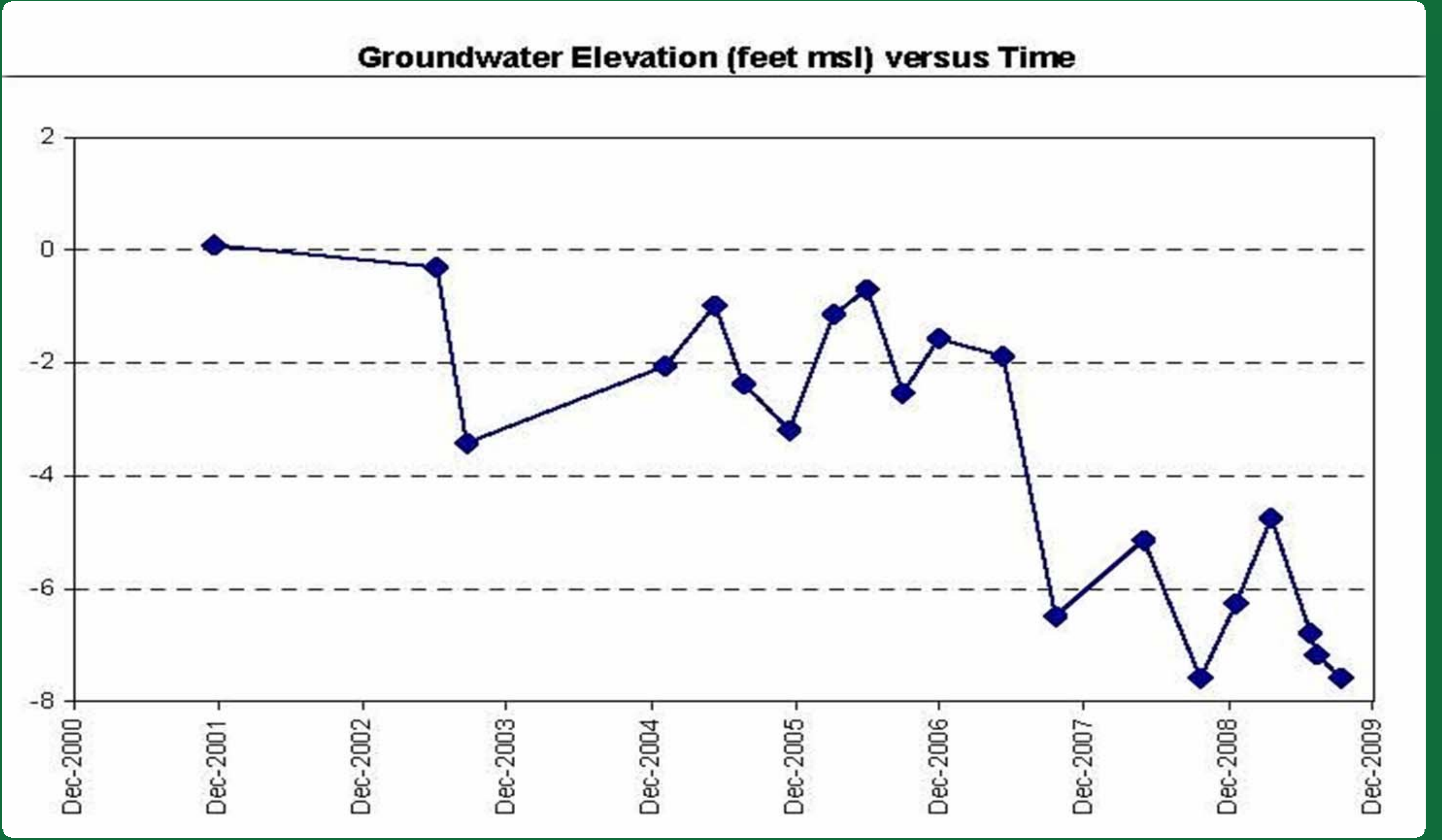
Surface Water Treatment Plant

July 21, 2010

Surface Water Treatment Facility

- Background
- Timing
- Schedule
- Budget

Groundwater in Downtown Lodi



Superior Water Quality

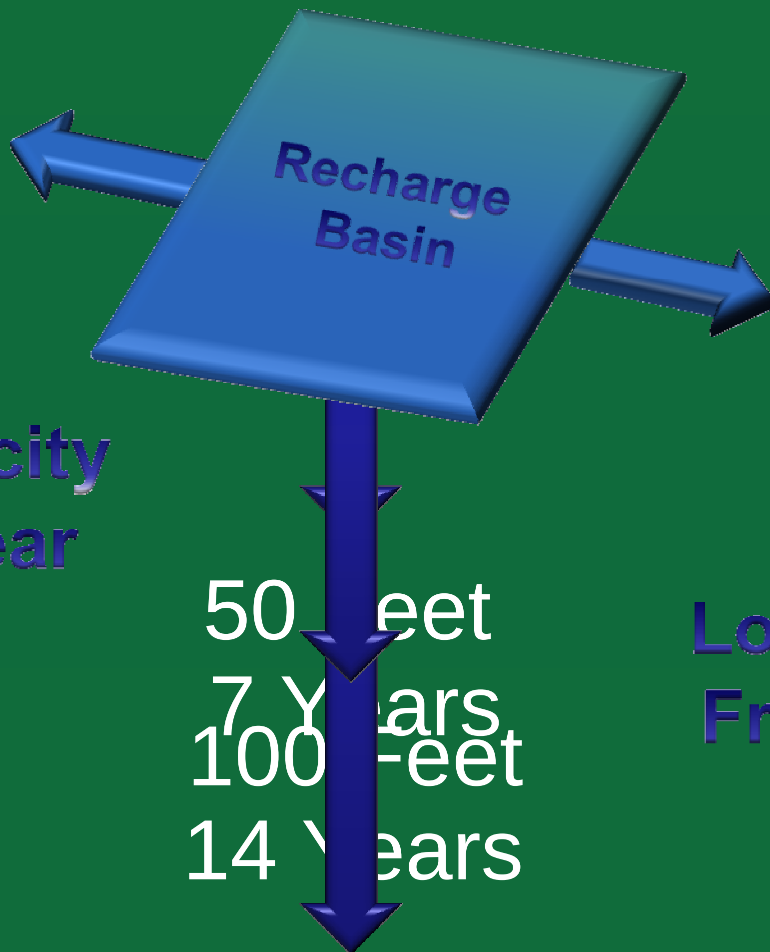
	Groundwater	Mokelumne
TDS (mg/l)	254	35
Hardness (mg/l)	131	14
Alkalinity (mg/l)	163	<20
Copper (ug/l)	320	<5
Turbidity (NTU)	0.06	2.4
PCE (ppb)	0.09	0
DCE (ppb)	0.07	0
TCE (ppb)	0.12	0
DBCP (ppb)	30	0

Delta Protection

• Total Dissolved Solids (current)	430 mg/l
• Total Dissolved Solids (reduced)	300 mg/l
• Avoided Capital Cost	$8.6 million
• Avoided Annual Operations Cost	$948,000

Recharge Is Slow

Vegetation Uptake 3 – 5%



Evaporation Losses 6 – 8%

Vertical Velocity 7 feet per year

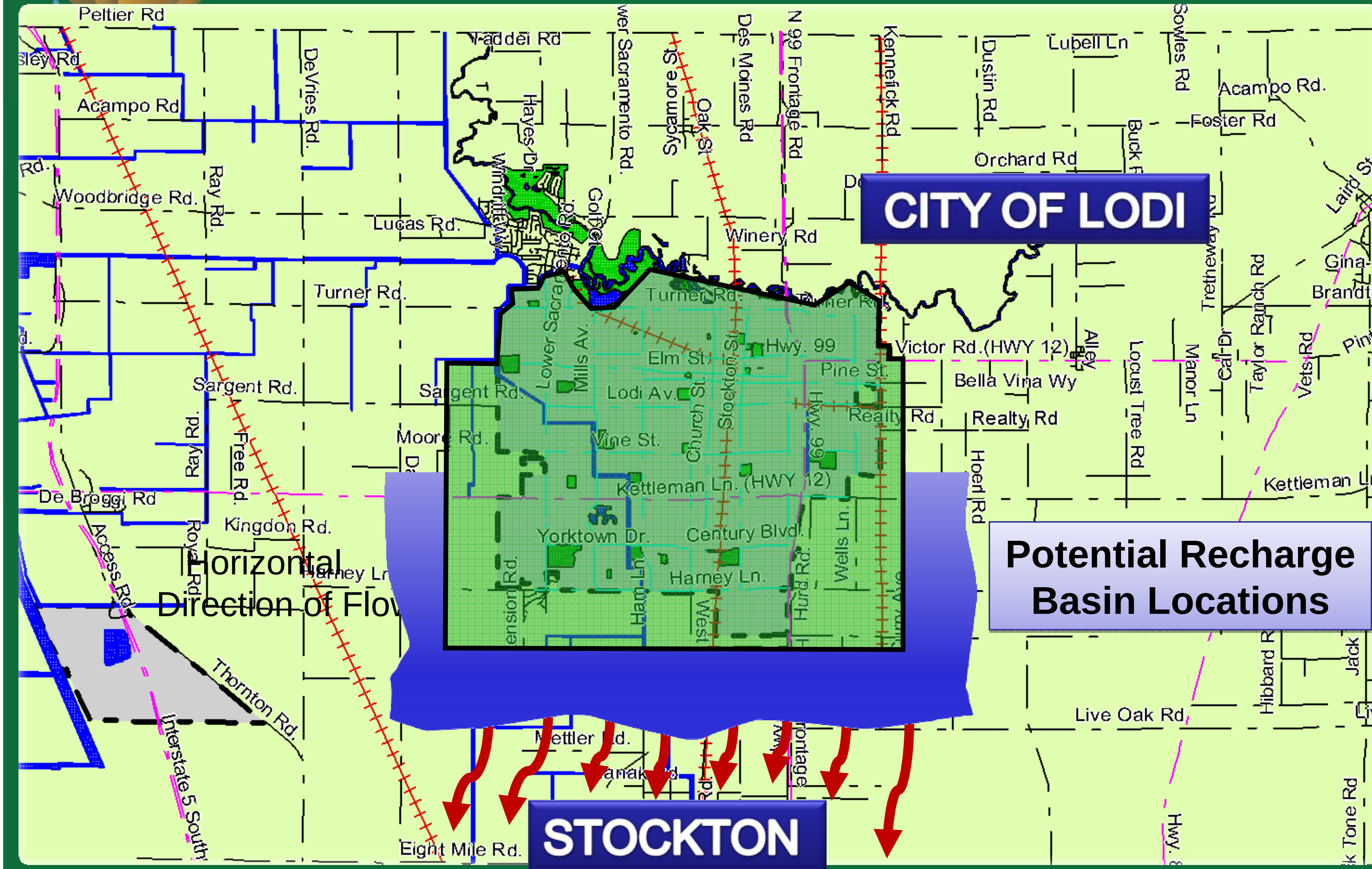
50 Feet
7 Years

100 Feet
14 Years

250 Feet
35 Years

Lodi Wells Pump From 250 Ft and Lower

Stockton Benefits



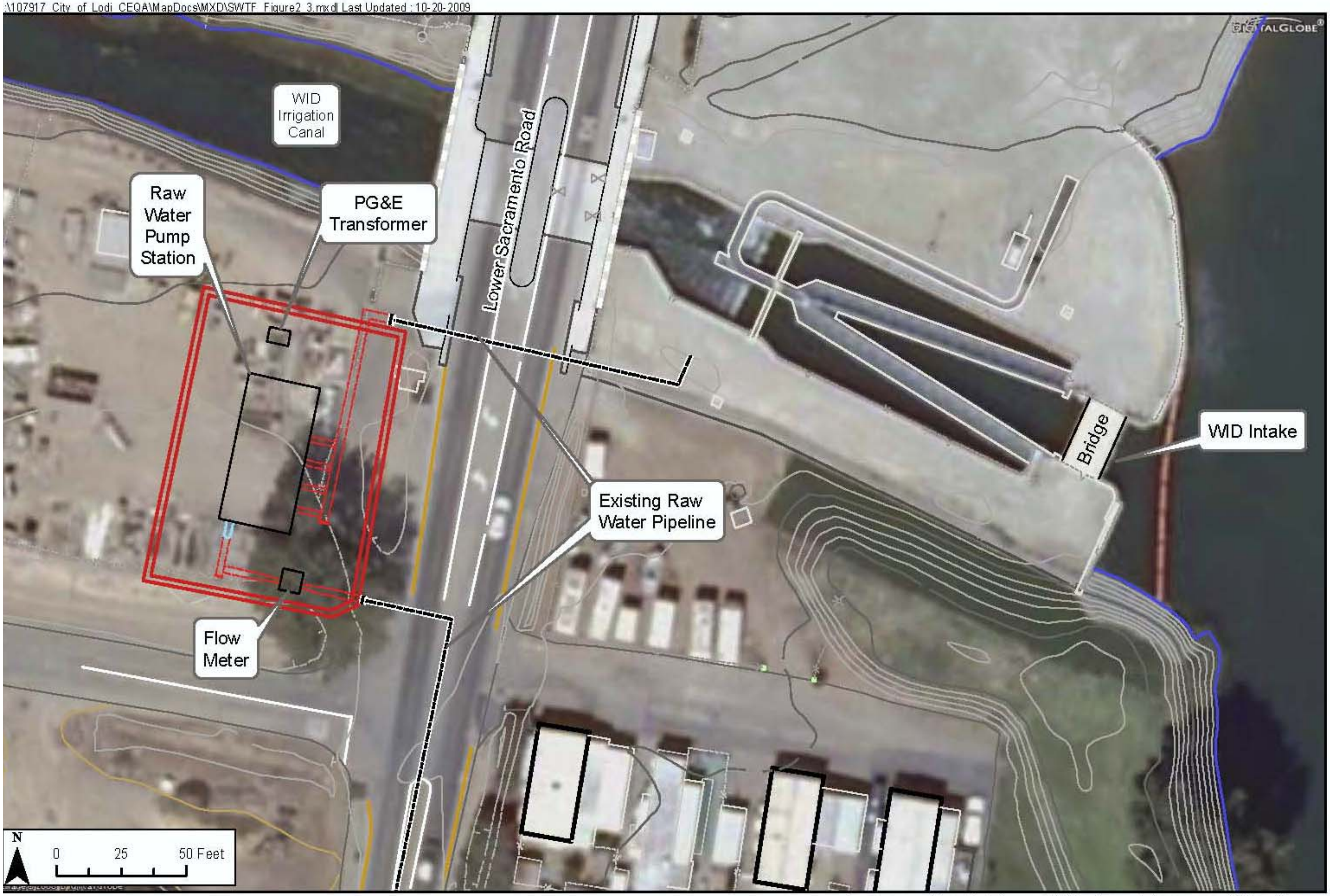
Costs ~ Recharge vs. Direct Use

Recharge vs. Direct Use Capital Costs

	Low Range		High Range	
Recharge:	$ 6,013,000	leased land @ $350/acre for 40 years	$ 30,301,000	purchased land @ $300,000/acre
Recharge w/Recovery:	$11,013,000	above plus transmission system	$ 35,301,000	above plus transmission system
Direct Use:	$29,500,000	latest estimate Note: All estimates are very preliminary	$ 36,700,000	2004 estimate

Timing Issues

- Banking option ends October 2010
- Cost of indecision = $100,000 per month
  - $12.4 million spent to date on water purchases, studies, treatment plant design
- Favorable bid climate
- Creates local jobs



Layout of Raw Water Pump Station

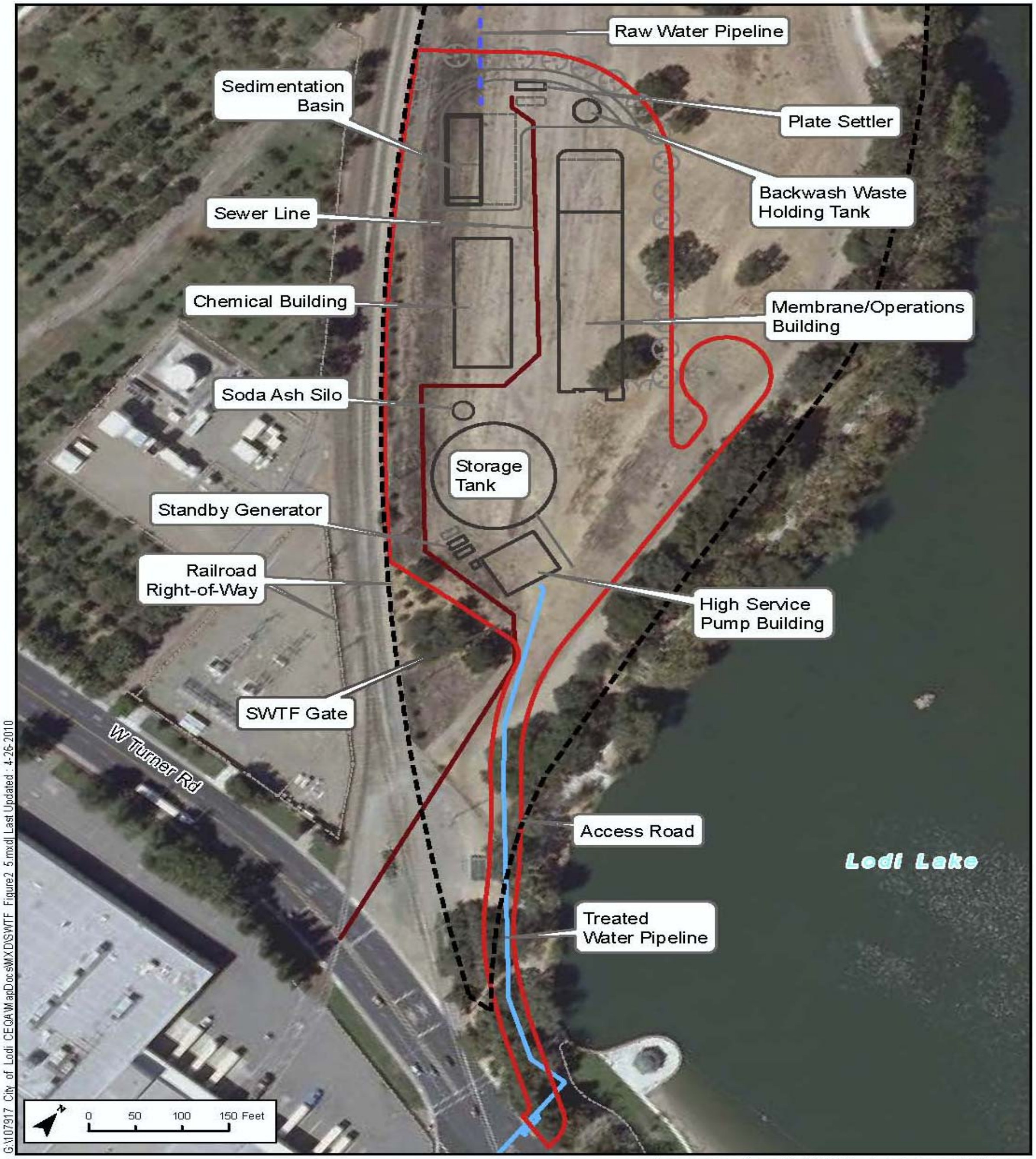
FIGURE 2-3

Project Location

FIGURE 2-1

HDR ONE COMPANY | *Many Solutions*

Surface Water Treatment Facility | City of Lodi, CA | HDR Project No. 141.107917.006



G:\107917 City of Lodi CEQA\MapDocs\MXD\SWTF Figure2 5.mxd| Last Updated : 4-26-2010

Layout of SWTF Facilities

FIGURE 2-5

HDR ONE COMPANY | *Many Solutions*

Surface Water Treatment Facility | City of Lodi, CA | HDR Project No. 141.107917.006

Schedule

Prequalification of Contractors

- Notice Inviting Bids: August 5, 2010
- Financing approvals: September 2010
- Award contract: October 20, 2010
- Construction period: 18 – 24 months

Project Budget

Budget Item	Amount
Site Acquisition – Parks Department	$ 1,200,000
Wastewater Connection Fee	$ 1,460,000
Construction, Fees & Related	$33,100,000
Pall Membrane System	$ 3,500,000
Other Equipment	$ 475,000
Construction Administration	$ 500,000
Contingency (5%)	$ 2,000,000
Total	$42,235,000

Contractor Prequalification

- Business and organizational history
- OSHA, Workers Compensation and labor compliance
- Project experience
- References
- 18 submittals
- 16 qualified

Recommended Action

Approve Plans and Specifications and Authorize Advertisement for Bids

Questions?